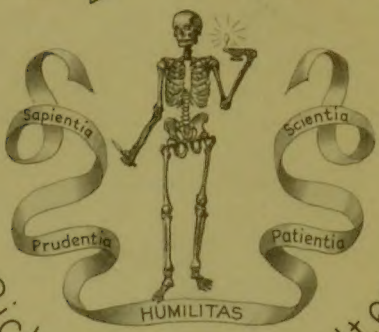

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1895

# A TREATISE

ON THE

NATURE, CAUSE, AND TREATMENT

OF

# CONTAGIOUS TYPHUS.

From the German

OF

J. VAL. DE HILDENBRAND,

IMPERIAL AND ROYAL COUNSELLOR, PROFESSOR OF THE PRACTICE OF MEDICINE IN THE UNIVERSITY OF VIENNA, CORRESPONDING MEMBER OF THE ROYAL SOCIETY OF GÖTTINGEN, OF THE SYDENHAMIC SOCIETY OF HALLE, AND HONORARY MEMBER OF THE PHYSICO-MEDICAL SOCIETY OF ERLANGEN.

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BY S. D. GROSS, M. D.

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1829.

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Ego vero, et cujusmodi fuerit dicam; et quæ sibi quisque ob oculos proponens, si quando rursus etiam hic morbus ingruat, jam prædoctus aliquid habeat, ex quo præcipue eum cognoscat, hæc declarabo; tum quia ego ipse hoc morbo laboravi, tum etiam quia alios hoc laborantes ipse vidi.—*Thucyd. de Peste, L.* 11. *Ed. Oxoni. Shel. p.* 111.

# PREFACE.

Although we have a number of works on Typhus Fever, yet it is to be presumed, that the Treatise of Professor Hildenbrand, in an English dress, will not prove altogether unacceptable to the members of the profession, or entirely unworthy of their perusal. Germany, France, and England, have already acknowledged its merit; and almost every European writer of eminence, has considered its author as one of the most able writers upon the disease before us, as well as one of the most excellent and skilful practitioners of the present age. The observations which it contains are the result of an experience of more than twenty years, during which the author had frequently charge of large hospitals, and lazarettoes, and had an opportunity of witnessing the most extensive and deplorable ravages of the disease.

During the late continental wars which convulsed Europe, and carried havoc and destruction amongst her armies, Hildenbrand was faithfully engaged in combatting the ravages of Typhus Fever, and restored to his country, by the interference of his

skill, many a useful and valiant soldier. It cannot be justly supposed, therefore, that the work which we here present to the public, and which is the result of such extensive experience and profound observation, should be entirely destitute of useful matter.

Whether Typhus Fever is a very common disease in this country, is, perhaps, a matter of doubt; yet it cannot be denied that it often makes its appearance in many of our states, especially in New-York, New-England, and in the interior of Pennsylvania. Nor is it, perhaps, precisely of the same nature and characterized by the same symptoms as the Typhus of Europe; yet it does not necessarily follow from this, that we are to neglect its study, or pay no attention to the observations and opinions of foreign writers; because the disease may, from a variety of causes, soon become as common in the United States as it is abroad, and, perhaps, assume a similar character.

S. D. GROSS.

*Philadelphia, Dec.* 1828.

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# CONTAGIOUS TYPHUS.

## SECTION FIRST.

### OF THE DEFINITION OF CONTAGIOUS TYPHUS.

The word typhus is derived from the Greek Τύφος, or according to some, from Τύφλὸς, and owes its origin to the ancient Greek physicians. It properly signifies stupor; and febris typhoides, Τυφώδης Πυρετὸς, therefore, when taken in this sense, denotes nothing else than a fever, in which stupor is the most prominent symptom.

In the writings of Hippocrates, typhus signifies insensibility, or coma. Foësius says: (1) Τύφος apud Hippocratem dicitur stupor attonitus, cum quis mutus aut attonitus considet. This observation he has confirmed by several passages from the works of Hippocrates.

In the books of Hippocrates, (2) however, there are no less than five kinds of fever, described under the name of typhus. The first kind appears to be our common bilious fever; the second, a pituitary nervous fever; the third, a dysenteric; the fourth, a rheumatic, and the fifth, a hectic fever.

Although these books cannot be classed amongst the legitimate works of the Father of Medicine, yet they show, in a satisfactory manner, that the notions of the ancients, with regard to typhus fever, were neither clear nor comprehensive, and that the word typhus was employed rather to designate a single symptom of the disease than the whole assemblage of phenomena by which it is characterized.

(1) Œconomia Hippocratis.

(2) De Internis Affectionibus, Sect. III.

Galen, who was not contented with a mere empirical view of diseases, regarded the liver, the bile and the mucus, as having a powerful influence upon the production of typhus fever. He considered it in an arbitrary manner, and without any regard to the previous signification of the term, as a continued and inflammatory fever, symptomatic of, and excited by, erysipelatous inflammation of the liver. (1) In taking this view of typhus fever, Galen did not neglect to take into consideration the phrenetic stupor, which is the most essential symptom of the disease, (2) and which has chiefly given rise to its name, when he observes : Typhomania, affectus ex phrenitide et lethargo mixtus, in quo delirant ægri et somniculoso torquentur comate, ex bilis et pituitæ permixtione. (3)

In the mean time, as these theoretical ideas of Galen became disseminated, they had such an influence upon the minds of physicians, that the empirical view of the disease was so much neglected, that the stupor, the most apparent and prominent symptom, scarcely received any more attention; while the liver and the bile were regarded as the principal objects in the study of typhus fevers.

The Arabian physicians, who embraced the doctrines of Galen, united all their influence in support of this opinion, and the doctrine of these fevers, instead of receiving additional strength, was so much neglected, that its principal characters were almost forgotten. Avicenna, in fact, is the only one who mentions typhomania, under the name of *sohara subeth;* but without differing from Galen in any point whatever.

The excellent practitioners of the sixteenth century, who shook off with so much boldness the yoke which Galen had imposed upon them, during a period of more than one thousand years, fell into the same error as the ancient Greeks, in applying to typhus the same, and sometimes even a more limited signification. Petrus Forestus (4) relates the history of an

(1) Comment. in Aphor. 42. 1. 7.
(2) The stupida insania of Hippocrates.
(3) Comment. 1. in Prorrhat.
(4) Observa. Medic. Lib. 11. Observa. 37.

ordinary inflammation of the liver, under the name of typhus, which terminated in suppuration; and he considers as such, every kind of erysipelatous fever; although Galen, and subsequently Aëtius, described the inflammatory fevers, attended with erysipelas of the stomach, under the name of lipyrias, those with erysipelas of the lungs, under the name of crimodes, and those only which were attended with erysipelas of the liver, under the name of typhoides.

But this expression of erysipelas plainly indicates, that, in the sense of this doctrine, a typhus fever could not have been an inflammatory fever, properly so called; and that the inflammation which accompanied it never presented a true plegmonous character. In taking this view of the disease, however, physicians lost sight of its characteristic symptom—the stupor.

Prosper Alpinus gives a similar, though a somewhat more arbitrary view of these fevers, when he observes: (1) Febres exterius mites, intus conturbantes Græci typhodes appellant.

The humoral pathologists of the last two centuries, totally abandoned this denomination, and comprehended amongst the typhus fevers those which had a tendency to produce an alteration in the fluids. They confounded typhus also with the bilious, the putrid and petechial fevers; though, according to their origin, these fevers, as well as the hospital, prison and camp fevers, should only have been considered as so many varieties, and the useful views which might have been deduced from the peculiar character of typhus, were, by this manner of considering the disease, every day more and more neglected.

Notwithstanding this, the learned Sauvages, who appears to have attentively observed an epidemic typhus, which prevailed along the frontiers of Spain in 1761, laying aside every theoretical notion, gave a masterly description of this disease, and again pointed out its peculiar and characteristic symptoms. According to him, typhus is a fever which has a course of from two to three weeks, and differs but little from synochus during the first few days, but may be readily distinguished from it, by its having less intensity and heat, by the almost natural state of

(1) De Præsag. Vita et Morte. Lib. 1. cap. X.

the pulse and of the urinary secretions, and particularly by an insidious character susceptible of contagion ; all of which may give rise to coma, delirium, exanthematous eruptions, swellings of the parotid glands, convulsions and other symptoms. In consequence of these views of the disease, its characteristic symptom was again perfectly re-established. Sauvages also believes that the first and third typhus of Hippocrates, as well as his cacœthis, (1) were the same kinds of fever.

The physicians who believed that the solids were the seat of every morbid derangement, and particularly those who attributed every thing to the nerves, were contended by including typhus, properly so called, amongst the nervous fevers. But in the different views which they took of this disease, they fell into the same error as the humoral pathologists, by neglecting to take into consideration the peculiar nature of typhus. The slow nervous fever, so admirably described by Huxam, was nothing else than a typhus, which generally ran its course in fourteen days.

Dr. Cullen, in giving the definition of typhus, after Sauvages, observes: (2) "I think that the limits between the synochus and typhus will be with difficulty assigned ; and I am disposed to believe that the synochus arises from the same causes as the typhus, and is, therefore, only a variety of it. The typhus seems to be a genus comprehending several species. These, however, are not yet well ascertained by observation ; and in the mean time we can perceive that many of the different cases observed, do not imply any specific difference, but seem to be merely varieties arising from a different degree of power in the cause, from different circumstances of the climate or season in which they happen, or from different circumstances in the constitutions of the persons affected." Such is the explanation of this great nosologist, who has left us undetermined as to what meaning we ought to attach to the word typhus, which he has used in too general a sense.

(1) Coac. Prænot.
(2) Synopsis Nosologiæ Methodicæ.

This was no doubt the reason why most of the modern physicians have endeavoured to re-establish the ancient denomination of typhus; but, being guided by the authority of a great physician, who had given in an arbitrary manner, and contrary to the opinions of the ancients, too general a definition of the word typhus, (1) they regarded as such, not only every fever in general, but every stage of the disease in which there was some predominant symptom of nervous irritation, or some degree of debility.

In this manner, the sense of the ancient denomination, and the idea that should have been attached to it, were not only perverted, and the peculiar nature of typhus entirely neglected; but there resulted this logical error, that instead of dividing typhus into species, and considering it as a genus of nervous fevers, they comprised every nervous fever under the general description of typhus.

Peter Frank is the only one who has avoided this error, and who has conciliated the sentiments of the ancients (at least that of Galen,) with the opinions of the moderns, when he observes: (2) Non aliter cum Typhode, etc. veterum rem se habere observamus, quæ vix non semper ad nervosam aut malignam febrem pertinet, cum abdominalium viscerum inflammatione non nunquam conjunctam.

W. G. Plouquet (3) appears to have justly appreciated the peculiar nature of a species of typhus; but in another place, he takes this word also in a general sense, and regards the nervous and malignant fevers as synonymous with typhus.

J. C. Reil (4) denominates the typhus fevers those in which the vital energy of the organs is depressed and attended with an increase of irritability, and arising most frequently from a malignant and remote cause. He thus hypothetically associates with the idea of the stupor, which ordinarily accompanies

(1) L. C. § 67. He avows that he cares but little what meaning the ancients attached to this word.

(2) Epitome De Curand. Hom. Morb. T. 1. § 90.

(3) Delin. System. Nosol. T. 1. p. 183.

(4) Fieberlehre, § 300. etc.

the typhus fever, a sort of irritability which is in direct opposition to it; but he confesses that he was obliged to extend the dominion of typhus beyond the limits that are assigned to it by the sense of the term.

The partisans of the doctrine of excitement, classify the typhus amongst the asthenic fevers; or they comprehend under the name of typhus, every fever arising from debility.

Even the celebrated Hufeland, (1) understands by typhus, nothing else than a fever which is dependent upon a diminution of the vital powers; and C. F. Harles (2) refers the nature of this disease to a diminution of the vital energy, either of the whole system, or only of a single organ.

Sprengel, who has given such an admirable description of this disease, under the name of Febris Hungarica, nosocomialis, navalis, carceralis, castrensis, &c., has entirely avoided the denomination of typhus; (3) and the same thing is done by Pinel, (4) who includes the typhus in the order of fevers, which he has so ingeniously called ataxiæ.

From this general doctrine, and from the opinions of the writers on typhus, which we have just related, it appears:

1. That all physicians are agreed that a state of debility is the general and essential character of typhus.

2. That the bilious, the nervous, the malignant, the putrid, the petechial, the nosocomial, the prison, the camp and the typhus fevers, were confounded under the same name, and almost without the slightest difference, by the physicians of the sixteenth century; that all these fevers have been classed by the modern physicians amongst the asthenic fevers, though the word typhus, previously used to designate a species, was improperly employed to denote a genus—a circumstance which has been a source of much injury to the diagnosis and treatment of this disease.

(1) System. der Pract. Heilk. 2 Th.

(2) Neue untersuchungen über das Fieber überhaupt und überdie Typhusarten insbesondere.

(3) Handbuch der Patholog. 1. B.

(4) Nosographie Philosoph.

3. And finally, That typhus has not been considered as an essential and special disease, or as a peculiar kind of asthenic fever accompanied by the predominant symptom of a kind of stupor of the senses, or an affection of the liver; and that no physician has justly appreciated the primitive meaning of the word which has been so arbitrarily employed.

We cannot, however, consider every nervous or asthenic fever as a typhus, without too great a departure from the sense of the ancient denomination, and consequently from the proper use of language.

1. Because many fevers, which have not the slightest appearance of nervous disturbance, or any remarkable symptoms of true debility, have been described by the modern physicians as nervous or asthenic fevers; and because they have been more anxious to ascertain the causes of asthenic, than even the characters of debility itself. It is in this manner that physicians have often regarded a simple depression of the vital powers as a true debility, when, in fact, it was perfectly fallacious.

2. Because, although the true vital debility consists in the state which has been designated by the name of status nervosus, and in the asthenia properly so called, and which authorizes the denomination of nervous and asthenic fever, we should only comprehend under the name of typhus such a kind of fever, which is essentially characterized, according to the ancient and original denomination, by the attonic stupor and the typhomania. In the new doctrines of this disease, physicians have paid too little attention to its peculiar character, and have contented themselves with a generic denomination and a general mode of treatment.

3. Because, in general, we have as yet no clear and precise ideas of asthenic fevers; for the debility, or diminution of the vital activity and excitement, are rarely or perhaps never the cause, but simply the effect of the fever; and because we cannot by any debilitating means, artificially produce any kind of fever, as may always be readily done by stimuli; and, as has been beautifully remarked by Plouquet, (1) none of these fe-

(1) Exposit. Nosol. Typh. Tubing. 1800.

vers arise from a diminution of excitement or of the vital powers, but they come on simply with debility; and, in a word, the most malignant asthenic fever is always preceded by another febrile character, however short it may be, which is the reason that the asthenic character is always a secondary symptom, and never the disease itself.

4. And finally, because the typhus is an essential and primitive disease, and is therefore justly entitled to this name, from first to last; and because the simple character of the symptomatic debility, which may accompany every kind of fever and arise simply from the effects of bad treatment, does not merit the appellation of typhus.

The denomination of typhus, moreover, having been once taken arbitrarily, and given rise to very erroneous ideas, it is easily to conceive why some physicians have regarded typhus fever as contagious, and others as non-contagious; and why most of them have defended their contrary opinions with so much warmth, and even with some degree of truth; for the denomination was not only too vague, but the different cases of the disease were too undetermined. The words typhus, asthenic fever, nervous fever, putrid fever, bilious fever, pituitary fever, hectic fever, &c. have frequently been confounded, and the ideas that should have been attached to them have been so indistinct that many physicians appear to have been ignorant what kind of disease they should designate by these terms. The essential typhus was often taken for another fever, as certain fevers were falsely taken for the typhus.

In order, however, to avoid every ulterior dispute concerning the denomination of a disease, the original sense of which has been lost by an abuse of language, I shall treat in this work exclusively of the contagious typhus—a disease which developes its peculiar miasm in the human body, so as to be capable of being communicated to other individuals, and which is always perfectly similar and of the same essential nature, arising from a miasm sui generis and always the same; and which, in a word, should alone bear the name of typhus, since it possesses the peculiar characters which are expressed by this word.

The contagious typhus is an essential fever which presents a constant uniformity in its progress. It is a disease of a peculiar kind, and like the small pox, it is of a contagious nature; since, by means of a peculiar matter, which is developed during the disease, it may be transmitted and communicated to those who are predisposed to it. It has a peculiar exanthema, by reason of which it belongs to the family of exanthematous fevers, amongst which the contagious fevers are ordinarily arranged. It has a definite course, as well as different characters in its proper stages, and a constant and uniform symptom of stupor, with delirium or typhomania.

In its nature also, the contagious typhus, as has been ingeniously remarked by Galen, presents more or less evident biliary derangement; in a word, it is a fever which is in itself, sometimes inflammatory, sometimes nervous or putrid, and which may at all times assume these characters.

The typhus is distinguished from the malignant fever, by the fact, that the malignity, even when it causes a sudden depression of the vital powers as the meaning of the term indicates, is not necessarily contagious, and that it is in general only a symptom which may accompany every kind of fever, and even the typhus itself, when it has an anomalous course.

It is distinguished from the pure nervous and asthenic fevers, properly so called, in this, that, although these fevers are ushered in with true vital debility and the ordinary nervous symptoms, they are not contagious; and the affected nervous system manifests only some particular signs of this contagion, as for instance, the stupor and some others which we shall hereafter describe when speaking of the course of typhus. The exanthema, perhaps, also establishes some difference, as well as the periodical exacerbations, which are more peculiar to the simple nervous fevers.

It is distinguished from the putrid fevers, by the fact, that the character of putridity of these fevers is only symptomatic, and occurs during the course of every kind of fever, and is even sometimes, in anomalous cases of contagious typhus, a symptom of this disease. As long, however, as it is not typhus,

it is not of a contagious character, and appears to be, in every respect, an acute scorbutic disease.

It is distinguished from the inflammatory bilious fevers, which, so long as they are simple and unconnected with any other disease, are not only destitute of contagion, but they are distinguished by their characteristic phenomena, and especially by the absence of nervous symptoms. They manifest also, in general, rather a state of oppression of the vital powers than any real debility.

Typhus, in a word, is distinguished from all the fevers which we have just enumerated, and from all those which have any resemblance to it, by certain essential and predominant symptoms, and by a peculiar and determinate course. These phenomena will be more fully described in another section, where they will be distinguished as much as possible from the other accidental phenomena.

By this method, I believe it possible to avoid every mistake, and to point out in a clear and satisfactory manner, the distinction between the symptomatic and asthenic debility of fevers, and the typhus, properly so called; and I believe, moreover, that with these two words—contagious typhus—I shall be able to say enough to be intelligible and clear upon a subject which has hitherto been represented, in the writings of Cartheuser, (1) Reil, (2) Meier (3) and others, either in an insufficient manner, or under improper points of view.

I am far from misconceiving the merits which some modern authors, such as Mayer, (4) Frank, (5) Sternberg (6) and others, have acquired in the explanation of this disease, and in its distinction from other asthenic fevers; but their observations are by no means satisfactory. The English, in general, and particularly Campbell, (1) Stephenson, (2) Jearne (3) and Buchanan, (4) appear to have already had some clear ideas of typhus, at the time that the school of Brown enforced, with so

(1) De Typhomania. Fr. 1750.
(2) Pathologia Typhi acuti, Hal. 1792.
(3) Disser. de Typho. Wurc. 1804.
(4) Specimen Pract. de Remed. in Morb. Contag. Vind. 1806.
(5) Reisen. 11. Th.
(6) E. Horn's Archiv. für mediz. Erfahr. vii. B. 1. H.

much pretention, that every contagious fever might be explained by the doctrine of excitement.—A complete monograph upon this disease will perhaps excite more attention, and lead to more perfect and satisfactory results.

I have retained the denomination of typhus, because this term is, in reality, the most proper and convenient; and because it was employed by the most ancient Greek physicians, and expresses the most constant phenomenon of this disease. This expression does not lead to any erroneous theory, nor to any hypothetical mode of cure, as the names of putrid fever, nervous fever, bilious fever, and others are apt to do. In a word, it has in itself no particular relation to the different symptoms which occur during the course of the disease, but it is applicable to each stage and to each character of this fever, which are, ordinarily different in the different stages of the disease.

In order to give a more correct idea of the general character of typhus, and to penetrate into the intimate nature of this disease, it is absolutely necessary to pay particular attention to the difference which appears to exist in the contagious matter.

This contagious matter, independently of the variations and the accidental modifications which are sometimes observed in its effects, is not only more or less malignant, but it is likewise characterized by different and essential properties.

The typhus may be properly divided, according to the different degrees of intensity, and the modifications of this contagious matter, into malignant and ordinary.

The pestilential, or Oriental typhus, or the common plague, and perhaps also the occidental typhus, or the yellow fever of America, belong to the first division. Both these diseases are strongly characterized by malignity, and the climate appears to modify the contagious matter, which produces them, in such a manner, that some of the symptoms, and especially the exanthematous eruption, which is the most invariable symptom of the typhus fevers, are different from the ordinary symptoms of the European typhus. The typhomania and the affection of the liver, are, however, invariably present, and constitute the most common symptoms of the disease.

The ordinary typhus, which is peculiar to Europe, is commonly less malignant in its progress, nor are its symptoms so violent, so acute, or dangerous. Under this ought also to be comprehended, though only as so many varieties, the typhus which occurs in hospitals or lazarettes, in prisons and camps, the typhus of ships and besieged cities, and that which is developed originally in small communities, from whence it is extensively communicated, either so as to become endemic, like the fever of Hungary, or epidemic, like some malignant, putrid and petechial fevers. When these fevers are spread by contagion, they are nothing else than an ordinary typhus, and then, they are also contagious. Fracastor already observed of these diseases: (1) Sunt febres mediæ quodammodo inter vere pestilentes, et non pestilentes—majoribus etiam nostris cognitæ.

The consumption of horned-cattle or the plague of these animals, may, in every respect be comprised in the one or the other of these divisions which we have just indicated, because it is nothing but a typhus, communicated by contagion, and characterized by peculiar modifications. I would invite, therefore, the veterinary physicians, to pay particular attention to what we shall say upon typhus fever, as it affects the human subject, in order that they may draw such conclusions as may be applicable to the resources of their art.

I have treated the pestilential typhus, for several years, but having had but a few cases of this disease on the frontiers of Turkey, I have not been able to make any precise and satisfactory observations.

The remarks which I shall make upon the ordinary typhus, are founded upon a great number of careful observations, which every physician may compare with his own, since this disease is not of rare occurrence in practice. I have selected them, in fact, for the most part, from the observations on the typhus which occurs in hospitals and prisons, because I have seen it more frequently than any other, while those which I have collected upon the other varieties of typhus are comparatively few. But I am disposed to believe that the remarks which I shall make upon the first, may be readily applied to all the modifications of this disease.

(1) De Morb. Contag. Lib. 2, Cap. 6.

# SECTION SECOND.

## OF THE ANTIQUITY AND HISTORY OF TYPHUS, AND OF ITS EFFECTS UPON THE HUMAN RACE.

If we compare the observations that have been made in the preceding Section, upon the nature of this disease, with the word typhus, taken in the sense which the ancients attached to it, it will be obvious, that this disease, which is here designated under the name of contagious typhus, and which it is our main object to distinguish, in a diagnostic and therapeutic point of view, from other analogous fevers, was already known to the ancient Greek physicians, and that its intimate nature had engaged their particular attention.

There prevails, in fact, in the writings of Hippocrates (1) a striking confusion with regard to the five species of typhus which are there recorded; but the description of the first, of the second, and the third typhus, and especially the faithful description of a disease, which is found in the legitimate works of Hippocrates, under the title of "Popular Diseases," (2) prove that the contagious typhus, with all its different and essential symptoms, and its particular course, has been known and observed from the earliest ages to the present day.

If we take also into consideration the causes which produce this disease, and which must have been the same in all ages of the world, there can be no ground for doubt, that typhus is as ancient as the human race, or at least as ancient as the first traces of civilization or the formation of society.

And as this disease is contagious, and as the principles and species of contagion have always been the same, there can be no doubt that typhus often made its appearance, especially in

(1) De Intern. Affect, Sect. 3.

(2) De Morbis Popular, Lib. II et III.

hot climates, under the form of a prevalent popular disease. And if the ancients have said nothing of the contagious property of this disease, it is probably because they were still ignorant of it ; for it must be remarked, that during many ages, and even in modern times, physicians have uniformly sought in the air the causes of the Oriental plague, though they had already employed, with the greatest success, establishments for the prevention of infection.

This being the case, contagious typhus might easily have exercised its ravages, for several centuries, either as a sporadic, an endemic or an epidemic disease, accompanied by its different modifications, and conformably to the denominations and ideas that had been received at those periods. And this, in fact, has been the case.

Many of the contagious diseases which have desolated the human race, and which have been described under the name of the plague, belonged neither to the plague of the East, nor to the other popular epidemic diseases, and were nothing else than an ordinary prevalent contagious typhus.

Without pretending to make a parade of erudition, either in history or literature, and without taking the trouble to give an account of all the plagues that have been described, and which were nothing else than the ordinary typhus, I shall only cite that, which in the year 1528, ravaged all Italy, and carried off no less than twenty-one thousand of the French troops, (1) and which, according to its description and origin, was merely a typhus camp fever. The disease, which prevailed in the army of the emperor Charles V. in the year 1552, during the siege of Metz, described also under the name of the plague ; (2) the plague which appeared in Hungary, in 1566, and which spread, under the name febris Hungarica or pannonica, over a great part of Europe ; (3) the plague of Misnia, in 1574, that of Den-

(1) Math. Unzer. Catoptron Loimodes S. de lue pestefera, Lib. 3. Hall. 1615. Item Fracastor. de Morbo Contag.

(2) And. Gratioli. Commentarii de Peste. Venet, 1576.

(3) Dan. Sennert, de Morbo Hungarico.

mark, in 1613 and 1652 ; (1) that of Leyden, in 1669, (2) and several others, were nothing but an ordinary prevalent contagious typhus.

The innumerable multitude of epidemics that have been observed under different modifications, and which have been designated, according to their different and predominant symptoms, under the names of putrid, malignant, dysenteric, and other fevers, were nothing else than the ordinary typhus. For the proof of this, let us take a glance at the fevers that have prevailed in modern times.

The epidemic putrid fever which prevailed in and about Vienna, from 1757 to 1759, and which has been so admirably described by Hasenœhrl, (3) was a contagious typhus ; as well as the epidemic of 1771 and 1772, which caused so much mortality throughout Germany and in Vienna, and which has been described by Fauken, Langsvert, Jagemann, Huther, Melch, Œttinger, Mayer, Boehmer, Kesler, Schebelt, Opitz, and others.

I shall prove in a subsequent part of this work, that every violent epidemic may finally degenerate into contagious typhus. From this fact, it is evident that the famine and the calamities, which are the usual consequences of war, may draw after them a great mortality, either arising from contagious diseases, or, as it is vulgarly called, from the plague. Under such circumstances, the sufferings of man are at their highest pitch of intensity.

The mortality which arose from the contagious diseases that prevailed during the late wars, is still fresh in the memory. After the campaigns of 1793 and 1794, the contagious diseases desolated all Germany, (4) and again appeared in 1796 and 1797. After the campaign of 1805, a destructive contagion ravaged all Galicia, Moravia, Bohemia, Hungary and Austria,

(1) Ad. Lebenwald Chronik Aller denkwürdigen Pesten. Nürnb. 1615.

(2) Sylvii de le Boe, Prax. Med. Tract. 10.

(3) Hist. Med. Morbi epidemici S. febris petechialis, quæ 1757 usque 1759. Viennæ grassata est. Vindob. 1763.

(4) H. Rennebaum Hist. Morbi Epid. Contag. anni 1793 et 1794 a Francogallis captivis Culmbacium delati. Erl. 1796.

☞ I. C. G. Schafer über das 1793 in und um Regensburg Herschende Nervenfieber.

and penetrated into Germany and Russia. A similar disease made its appearance in the suburbs of Warsaw, and in a great part of Prussia; it directed its course towards the north, as has been asserted by Hecker, (1) and produced almost as great ravages as the plague in the Levant, and in the East Indies. These diseases, and particularly those of a prevalent character, are in fact, almost always the consequences of wars, and human calamities.

While I was writing this work, during the summer of 1809, at the commencement of the war, a prevalent and similar contagion had already made its appearance, and threatened the most dangerous consequences. The germs of this disease were partly developed in consequence of the crowded apartments of the soldiers, partly in consequence of the unwholesome situation of the camps, and partly also in the hospitals, whence it spread, after the evacuation of the convalescent, and followed their different routes, so as to produce the most extensive ravages. The direction of this disease could be easily traced, by following the route of the infected soldiers.

These contagious diseases, which are the consequences of the calamities of war, and which occasion so great a depopulation, have been justly denominated by Hufeland, the "Pest of War." They are always produced by the contagious typhus; and what is still worse and more to be regretted, they frequently display their most horrible and destructive effects long after the establishment of peace between the contending nations.

An excellent description of the typhus camp fever which carried havoc and destruction into the Carthagenian army at the siege of Syracuse, may be found in the writings of Diodorus, (2) the historian.

Similar contagious typhus diseases, however, may often prevail to a very great extent, and may occasion considerable mortality, without the consequences of war or the influence of that dreadful scourge of humanity.

If we take into consideration all the remarks which we have made, and if we take a glance at the by-passed ages of the

(1) Uber die Nervenfieber, Welche in Berlin 1807 herrschten.

(2) Biblioth. Hist. Lib. 14. Cap. 70–71.

world, and the millions of people that have been the victims of contagious typhus, it will be seen that this disease has more contributed to the depopulation of the human race, than even the plague, which, though it is more malignant in itself, is nevertheless of more rare occurrence.

Like the small-pox, scarlatina, croup, epidemic catarrh, phthisis pulmonalis and the plague, contagious typhus is one of the seven heads of the cruel Hydra which devours the human race, which threatens incessantly the inhabitants of Europe with calamities and death, and which in general causes the greatest mortality throughout the world.

Powerful means have already been discovered for the prevention of the small-pox, and experience has proved that mankind have but little to fear in future from this disease. The Oriental plague is no longer so dangerous as formerly; the means of keeping it off are already known, and of preventing it when it makes its appearance in the West. It is true we can never perfectly destroy the typhus, because it may every day be reproduced upon our soil, but it is in our power to arrest its propagation. This, however, has hitherto been but imperfectly done; and it is high time to lay aside the unhallowed idea that we have done enough for humanity, when our attention has been occupied with the preservation of single individuals. It is a duty enjoined upon us by the sacred ties of nature to prevent the propagation of such diseases, and to free, as far as lies in our power, mankind from its horrible effects.

The efforts of physicians in preventing contagious diseases, may, in general, be regarded as of the highest importance, because, to preserve the health of thousands is certainly a much greater blessing than to be able to treat the disease of a single individual; since it is proved, that the contagious diseases, which might cause almost a total destruction of the human race, are not only its greatest scourge, and the most extensive cause of its depopulation; but what is still more dreadful and distressing than any other circumstance, is the fact, that by means of this disease, the contagion may be reciprocally communicated from one individual to another, from brother to brother, from the

father to his children, and from the children to their parents, and that the fraternal and charitable reception of those who are affected with typhus, the most sincere pity, and the most tender cares are too frequently involuntarily recompensed by the contagion, the disease and death of the benefactor.

These reflections have induced me to persevere in making indefatigable researches upon the contagious diseases, and I may be permitted to hope that my efforts will not be altogether without benefit to the human race, especially so far as they relate to the contagious disease of which we are treating.

## SECTION THIRD.

### OF THE PRELIMINARY DIVISION OF CONTAGIOUS TYPHUS.

In order to give a correct description of the contagious typhus, and to avoid every confusion in the classification, the etiology and treatment of this disease, it will be necessary in the first place to give an exact division, and then to treat of each of these divisions in particular.

In the first place then, typhus may be divided into communicated contagious typhus and into originary typhus.

The communicated typhus is that which attacks a person in health, or one who has already been suffering from previous disease, but which, in this case, has no dependence upon, or relation with, that disease, and which results solely from the communication of a peculiar contagious matter, which, during the course of the disease, is regenerated and strengthened in the human body, in such a manner as to be able to communicate itself to other individuals. In this respect, the communicated typhus may be accidentally connected with another disease, without, however, its being essentially dependent upon it. It may be either simple or complicated, but in relation to its origin it is always a primary disease produced by contagion.

The originary typhus, on the contrary, is that which is developed spontaneously by means of some other disease, and by means of certain requisite conditions, without being produced by any previous contagion, but which may afterwards be communicated to other individuals by a subsequent contagion. The originary typhus, therefore, is always in itself a secondary disease, which is not only produced by another disease, but which can never appear in a healthy individual.

Although it cannot be confirmed by experience, yet reason teaches us, that every communicated contagious matter must have its peculiar and primitive origin. The contagious miasm of typhus, which is perhaps better understood than that of any other disease, is developed in consequence of other fevers, in such a manner that we can describe and explain its progress; and by means of certain requisite circumstances, it may, as we have already said, be daily reproduced.

Notwithstanding this, it is of the greatest importance to distinguish the symptomatic debility, and the nervous state of the originary typhus, in which the danger of the contagion is of a purely chimerical nature, while it is of a directly opposite character in the communicated typhus.

I shall hereafter have occasion to point out the circumstances which give rise to the developement of the matter of contagion, during the state of debility, as well as the characteristic signs, by means of which this fever may be readily distinguished from the nervous putrid fevers, so called, and which are of a non-contagious character.

Finally, contagious typhus may be divided into regular and irregular.

As the typhus, especially when it is communicated by contagion, is an essential disease, arising from a constantly uniform miasm; so it also presents in its natural course, when uninterrupted by any extraordinary cause, a constant uniformity in its symptoms and its stages, like the small-pox, and all the essential exanthematous fevers, which, by their contagious character, may give rise to similar diseases.

If, however, there be any unusual causes which act upon this disease so as to disturb its ordinary course, it then changes its nature, like the other contagious exanthematous fevers, and becomes irregular or anomalous.

In describing the contagious typhus, we shall enter into a minute detail of all the different forms in which it can possibly occur; but before this can be done, we must necessarily give an account of the primitive and natural state of the simple and regular typhus which is communicated by contagion; in doing

which, we shall be obliged to defer our description of the exceptions and complications of this disease for another section, where they will be more readily understood; and in the last place, we shall make some general observations upon the originary typhus.

I shall not admit the division of typhus into acute and chronic, because I regard this disease in another sense, that is, in the sense of its contagious character; and because the slow nervous fever, which is very often nothing but the pituitary or catarrhal fever of the humoral pathologists, with nervous symptoms or debility, is not contagious; while the contagious typhus, on the contrary, is always acute, even when the symptoms which accompany it are moderate.

## SECTION FOURTH.

### OF THE SIMPLE REGULAR TYPHUS, COMMUNICATED BY CONTAGION.

The contagious typhus, like all the contagious exanthematous fevers, such as small-pox, rubeola, scarlatina, and the pestilential fever, has its regular course which is determined by the nature of the contagious matter, and its accidental symptoms, which, although they are few, nevertheless predominate over all the other characteristic and general phenomena of the fever, and are in relation with the modus operandi of the contagious matter.

This regular progress of the characteristic symptoms of each period, may be particularly observed and demonstrated in typhus, as in all the other essential contagious fevers:

1. When this disease attacks a person who has been previously in the enjoyment of health.

2. When it is produced by contagion.

3. When it is simple in its course and uncomplicated with other diseases.

4. When the constitution is not of a particular epidemic character, so as to hold it under its influence.

5. When it is left to itself, or when the regularity of its course is not interrupted by any powerful remedies.

6. When it is not deranged by any violent method of treatment, and when we avoid all such means as have a tendency

to increase its intensity and to give it an unnatural and improper direction.

I am enabled, from a great number of careful and repeated observations on the regular contagious typhus, to give a description of this disease, which is not gleaned from books, but founded upon correct and repeated observations upon the disease itself. This description, however, agrees with those which have been transmitted, under other denominations, by some excellent observers, particularly by Huxam, Sauvages, Pringle, Hasenœhrl and Sprengel.

From its commencement to the perfect reestablishment of health, the simple contagious typhus runs through eight periods or stages; but if it terminate in the death of the individual, it is evident that the number of these periods may diminish. Each of them has its peculiar character, according to the circumstances of the disease, as well as its determinate limits. For this season, therefore, I shall examine each in particular.

## FIRST PERIOD.

### *Of the Stage of Infection.**

This stage probably lasts but a moment, during which the contagious poison is conveyed into the healthy human body, in such a manner as to take root and to manifest, sooner or later, its injurious effects.

There is no striking sign by which we can ascertain the action of the contagious miasm upon the animal economy at the moment of the infection. Some physicians have advanced the idea that they could determine the instant that the contagious poison is taken into the system, by certain peculiar sensations, by a kind of electrical commotion, by the impression of a mephitic vapour, &c. But these notions appear to be only the result of a vivid imagination; and I am inclined to believe that in these cases the infection had already terminated, and that

* Stadium der Ansteckung.

these sensations depended upon the alteration of the irritability, and constituted the precursors of the disease.

I have always paid particular attention to the sensations which took place in my own person while sitting at the bedside of my patients who were affected with the typhus fever, in order to ascertain whether I could perceive any particular feeling arising from the contagion. I have contracted the disease, and knew the patient who communicated it to me, without being able to distinguish or feel any peculiar impression dependent on the contagious poison.

The analogy of the phenomena of other contagions also shows, that the human body experiences no sensible impression at the moment the contagious matter is conveyed into the system. A person, therefore, never knows the time when the infection takes place, however important and desirable it might be so to do.

It appears to me, however, though it is merely a conjecture, that the vivid and peculiar sensation of heat which is experienced by the patient, and which seems to increase under the hands of those who touch him, may have some relation with the contagion by immediate contact. Be this, however, as it may, this sensation is not owing to a real increase of heat, since the application of the thermometer, as has been justly remarked by Sprengel, indicates, in fact, a diminution of heat. This sensation cannot be perceived by immediate contact, but the patient appears to experience an agreeable sensation in the part which was the original seat of the contagion.

## SECOND PERIOD.

### *Of the Forming Stage.*

Under the title of forming stage, I comprehend, according to the common acceptation of the term by modern authors, that state, in which the precursors of the disease are observed, while the person still enjoys some degree of health.

These precursors of typhus are not characterized by any peculiar symptoms, but they consist solely, as in all fevers, in certain general phenomena of indisposition, such, for example, as a feeling of lassitude, indifference, loss of appetite, fatigue after exercise, want of sleep, &c. The fetid breath, the tremour of the hands, frequent vertigo, a painful and sudden commotion of the limbs, as if it were produced by an electrical shock, severe pain in the loins, and oppression in the epigastric region, are perhaps the most constant symptoms in this stage of the disease.

How long this prodromal state, between the contagion and the invasion, properly so called, may continue, or how long it generally does, it is not possible precisely to determine, because we never know the exact time when the infection takes place. Nor can we ascertain the limits which separate this stage from the natural contagion, by artificial inoculation, any better than in the disease called small-pox; yet I am disposed to believe, from repeated observations, that this stage never lasts less than three, nor longer than seven days.

We are still ignorant also, whether the contagious virus of typhus remains for a certain time inactive in the human body, as is the case, for instance, with the hydrophobic virus, and then suddenly displays its injurious effects, or whether it acquires intensity in a slow and progressive manner. It seems to me, however, that the symptoms of the forming stage are more apparent towards the latter days which precede the invasion of the disease.

## THIRD PERIOD.

### *Of the Stage of Invasion, or the Commencement of the Fever.*

The stage of invasion commences, like every other kind of fever, with a painful and unpleasant tension in the head, horripilations in the back, slight chills, alternated with flushes of heat, and with the other concomitant symptoms, such as a pale

and dejected countenance, a constricted skin, tremours, thirst, great anxiety, &c. The patient loses his gayety, and repairs to his bed in order to seek warmth and repose.

As the chills of the contagious typhus attacked me at a public entertainment, where I was obliged to stay during the greater part of the night, I had an opportunity of observing the powerful influence of the mind in preventing the dejection which is one of the ordinary symptoms of this stage of the disease.

The horripilations are extremely severe, as they are generally at the commencement of every violent fever. They preside over the invasion of typhus—a disease which never leaves the patient before the occurrence of a crisis. They generally last from six to twelve hours.

## FOURTH PERIOD.

### *Of the Inflammatory Stage.*

This might with equal propriety be called the inflammatory catarrhal or exanthematous stage, the stage of irritation, or according to the expression of the ancient physicians, the stage of ebullition. But as I am satisfied with an empiric view of this disease, I purposely avoid every denomination which has any reference to hypothetical theories, and which might lead to arbitrary methods of treatment, and content myself with such denominations only as shall designate the prominent and constant characters of the disease, and which shall indicate the proper method of treatment. With this view of the subject, therefore, I shall call this the inflammatory stage of the disease.

This stage lasts seven days, and forms the first septenary of this disease.

### *General Observations upon this Period.*

To this septenary stage I shall apply the name of inflammatory, because the disease is really characterized by symptoms

of inflammation, as we shall prove by the following observations:

1. In this stage of the disease, there is no real debility of the vital powers; but on the contrary, they enjoy a higher degree of activity and energy, or at all events, they are only in a state of depression. The symptoms which are usually present in the inflammatory fevers, and, in general, in the diseases of this kind, are also developed in the stage of which we are speaking. These symptoms are: a frequent, strong, full, and oppressed pulse; loss of muscular power; a general turgescence, with redness; a white and humid tongue; oppression at the chest; a moist skin; scanty, red and scalding urine; constipation of the bowels; continual exacerbations without any apparent remissions; and, as has been demonstrated by Lind and Milman, even a buffy appearance of the blood.

2. The antecedent cause—the contagious miasm—which must necessarily act upon the human body as a violent and foreign stimulus, produces a real state of irritation or inflammation at the commencement, and which, however short it may be, is nevertheless inevitable. The truth of this assertion is perfectly confirmed by analogy. All the contagious fevers, as well as every contagious disease without exception, as for instance, the small-pox, rubeola, scarlatina, pertussis, syphilis, gonorrhœa, hydrophobia, and even the pestilential fever, are characterized at their commencement, by symptoms of inflammation.

3. This fact, is moreover, satisfactorily proved by the mode of treatment which is applicable to this stage of the disease; which, though not strictly antiphlogistic, is always of the greatest efficacy. In fact, in the septenary stage of the contagious typhus, every thing of a stimulating nature is injurious to the patient, and the mild or refrigerating means are so useful, that his welfare, during the subsequent stages of the disease, and during the crisis, appears, in a great measure, to depend upon them. Reason and experience, therefore, have always confirmed the utility of a moderately antiphlogistic mode of treatment in this stage of the disease, and the modern physi-

cians, notwithstanding their limited views on this subject, have decided in favour of this practice. (1)

Finally, the examination of the inflammatory character of this stage, can alone perfectly terminate the numerous disputes which exist amongst the empiric physicians, with respect to the debility and the irritation which occur in these diseases; for each of the opposite methods of treatment may have its value, if we take into consideration the different stages of the disease and its prominent characters.

The inflammatory character in the first stage of typhus, moreover, is intimately connected with a peculiar exanthema, which is analogous to that which occurs in every other exanthematous contagious fever. The inflammatory state, however, always occurs before the exanthematous irruption makes its appearance. Although the inflammatory character is a constant and uniform symptom of the first stage of every exanthematous contagious fever, as well as of the contagious typhus, at least in its ordinary course, it never has the symptoms of a real simple inflammatory fever; but is generally so much complicated with symptoms of catarrh or gastric irritation, that it is not of unfrequent occurrence that one or the other of these predominant forms of the disease, renders the diagnosis exceedingly difficult and perplexing to the physician. This circumstance, therefore, deserves particular attention, in as much as it has already given rise to numerous errors in the treatment of these kinds of fever.

The catarrhal symptoms in this stage of typhus, are characterized by redness, a slight inflammation, and a watery discharge from the eyes, by engorgement of the nasal fossæ, which are at first filled with a limpid mucus, which becomes gradually dry and inspissated, and blocks up the nose; by similar phenomena in the mouth, the fauces, the œsophagus, and even the trachea, attended with a slight cough, and oppression at the chest, and consequently a slight degree of peripneumonia. These symptoms, together with the frequent bleedings from the

(1) See J. A. Marcus Entwurfeiner Specielen Therapie, Nürnb. 1807.

nose, and the slight or superficial inflammation of the fauces, clearly show how much the mucus organs of these parts are usually affected in this stage of the disease.

These symptoms are an immediate effect of the contagious typhus, both in the human subject and in horned-cattle. Man, however, is more subject to the ordinary catarrhal affections, which consist in disagreeable and painful sensations throughout every part of the body, and particularly in the extremities.

The typhus, like every other contagious fever, is characterized by an inflammatory catarrhal stage which precedes the appearance of the exanthematous irruption, and like every animal contagion, has a peculiar effect upon the mucus membranes of the nose and of the fauces.

The gastric symptoms in typhus, are always, except in case of accidental gastric complication, owing to the catarrhal affection, with which they are so intimately connected that they are probably nothing else than this affection itself, in which the derangement of the secretory and absorbent functions of the primæ viæ causes an accumulation of mucus, which gives rise to gastric irritation, to nausea and vomiting, to the whiteness and foulness of the tongue, to loss of appetite, to disturbance and irregularities of the intestinal excretions, and other affections.

How far the state of irritation of the liver, considered either in a proximate or remote point of view, and the alteration of the bile which it secretes, contribute to the increase of the gastric symptoms, we shall take an opportunity of pointing out in a subsequent part of this work.

I have given this general view of the phenomena which characterize this stage of typhus, in order that I may hereafter be able to examine more carefully each symptom in particular, which I shall lay down from the most careful and attentive observations; and in order that I may be able also by this means to furnish the proof, that this stage of typhus is characterized by febrile irritation, and by catarrhal and exanthematous affections, without being accompanied by any symptoms of debility or of nervous disturbance.

It appears evident from the preceding observations, that this stage of the disease, by the inflammatory character which distinguishes it, indicates that the lymphatic system is affected in a very sensible manner; and it is to this state that we may, with propriety, refer the nervous symptoms. From this fact, we may also learn the reason, why aged and debilitated subjects sometimes suffer so little from the catarrhal and inflammatory symptoms.

*Description of the Symptoms which occur in this Stage of the Disease.*

After the chills have disappeared, and the fever is properly developed, the patient experiences a remarkable febrile heat, which is sensible to the touch, and extremely distressing to his feelings, and which has this peculiarity, that every part which is uncovered is affected with chills, while those, on the contrary, which are carefully covered, occasion great anxiety, and an unpleasant and extremely distressing warmth. Great thirst, and a longing after cold and acid drinks, invariably accompany this stage of the disease.

In this stage of the disease, the external senses are ordinarily but little affected, excepting perhaps, the sense of touch. The faculties of the mind are also but slightly affected; and the desires, though guided by a certain instinct, become gradually more depressed, and, although the nervous system does not appear at this moment to be affected in any particular manner, yet the encephalic symptoms are already numerous, and extremely characteristic. The head is affected with vertigo, becomes extremely heavy, and feels, as it were, rather a sense of intoxication than of real pain.

Under these circumstances, the nausea and frequent vomitings, which generally take place, even when the tongue is perfectly clean and unfurred, appear to be rather a consequence of the vertigo, which accompanies this stage of the disease, than the effect of the contagious irritation upon the stomach. The irritation of the liver may also contribute to produce these

affections. These symptoms never owe their origin to the irritation of the stomach, except in those cases where this organ has been over-distended, either before or during the development of the disease, with too great a quantity of fluids, taken with a view to allay the great and parching thirst.

The other phenomena which are developed in this stage of the disease, are the ordinary and general symptoms of an inflammatory fever, unaccompanied by any local affection, except the catarrhal symptoms. The countenance is red and animated; the tongue rather white than furred; the skin moist and clammy; the urine scanty, red and sometimes scalding; the feces almost natural; the pulse full, frequent and oppressed, accompanied by a remarkable dilatation, and an evident want of contraction of the artery,—a kind of orgasm, consisting in a great expansion and a feeble contraction.

Such is the state of the patient during the first day after the invasion of the disease.

On the second day of the disease, after a night of restless anxiety, some of the first symptoms slightly abate, and give way to others. The nausea and vomiting either disappear or diminish; the heat increases, and the precursors of delirium already begin to make their appearance. Under these circumstances, the patient sometimes appears to enjoy sleep, when, in fact, he experiences the most severe internal agitations. The heaviness in his head gradually increases, so as to amount to stupor; there is a ringing noise in the ears, with a derangement of the functions of hearing; the vertigo increases in a very remarkable manner, and the patient cannot assume the erect posture without experiencing great debility, or sickness at the stomach. The eyes become more red; the catarrhal symptoms in the fauces and the nasal fossæ gradually augment; the mucus membranes of the tongue and of the posterior part of the mouth are more engorged than in the healthy state; deglutition is more painful; the oppression at the chest becomes more alarming, and approaches to peripneumonia; the cough is often distressing; the hypochondriac regions, especially the right, become tense and painful, and the tension and uneasi-

ness in the extremities, and particularly in the calves of the legs, and in the articulations of the fingers, gradually augment in intensity and pain. The same unpleasant sensation is experienced in the lumbar and dorsal regions; and although the vital powers are still in a moderate state, the morbific phenomena of the cutaneous organ, of the excretions, and of the pulse, as well as the fever in general, become more exalted than during the preceding day.

On the third day, the disease is still characterized by the same symptoms, which augment in an almost imperceptible manner. Until now, however, there have been no well marked alternate remissions and exacerbations, except those which generally take place at evening.

To the characteristic and pathognomonic symptoms, which occur during the first three days of the disease, and which serve, amongst a host of other variable phenomena, to point out the diagnosis of contagious typhus, belong the remarkable stupor and vertigo, which are, in every respect, similar to the intoxication which is produced from the effects of inebriating liquors, or from the narcotic poisons. The redness of the eyes, the catarrhal and peripneumonic symptoms, the affection of the liver, the disagreeable and painful tension in the extremities, and particularly in the calves of the legs, and the articulations of the fingers, are the cause that the contagious typhus has been considered and treated by some physicians, who have disregarded every other phenomenon of the disease, as a rheumatic fever. These symptoms, it is true, are sometimes so slight, that an inexperienced physician may not be able to distinguish what kind of fever he has to combat.

Besides the essential symptoms, which we have just enumerated, there is not only in this, but in every other stage of the disease, an invincible repugnance on the part of the patient to perform the least motion, which is so much the more remarkable, because his muscular powers are neither so much depressed nor debilitated as we might at first sight be disposed to believe. In this stage of the disease, the patient also begins to experience difficulty in speaking, and observes the most perfect

silence, unless he is interrupted by his friends or attendants; he answers slowly and incoherently, and puts out his tongue with difficulty.

From these observations upon the symptoms of the contagious typhus, it is evident that it may be distinguished, even during the first days, from every other kind of fever.

On the fourth day, which forms the moiety of the first septenary, are already developed some of the precursors of a crisis, which are, however, extremely imperfect, and produce only some slight relief, or rather a remission of the fever, without a decided termination.

On the fourth day there is generally a slight degree of hemorrhage from the nose, which is always accompanied by a temporary relief of the encephalic symptoms. The blood, which is discharged, is generally thick and consistent.

There appears also, about the same time, an extraordinary redness upon the whole surface of the body, that is, upon the external tegumentary membrane, which forms what is called the exanthema of this disease.

This exanthematous irruption, and the nasal hemorrhage, probably arise from the same cause, and are, no doubt, owing to the plethoric state of the small capillary vessels, which gives rise not only to the dilatation and redness of the cutaneous vessels, but also to the slight effusions into the cellular tissue, which are nothing else than an internal hemorrhage of these small vessels.

The absence of analogous symptoms in the internal organs, which are affected in a similar manner, permits us to presume, that this turgescence is less prominent in the internal parts and the viscera, except perhaps, in the lungs and the intestines, than upon the external tegumentary membrane.

In the first case, when there is a simple dilatation and turgescence of the cutaneous vessels, with an imperfect distribution of the fluids, there will be a mere red-spotted exanthematous irruption. We may remark, however, that the tegumentary membrane of the healthy subject, sometimes presents a red, and if we may be allowed the expression, a marble-like

colour, which is unequally diffused, and is particularly observable when the skin is somewhat cold or chilly. It is in this manner that the red-spotted exanthematous irruption of typhus sometimes makes its appearance; an irruption, which is very easily succeeded by small vesicles, called sudamina, and by small red pustular elevations, which are not unlike the purple pustules which occur in the malignant fevers.

This exanthema, which has all the properties of the purpura rubra, is observed on the surface of the body, the face, and especially on those parts which are subject to warmth, as the back, the breast, the upper part of the thighs, and the anus. This irruption, which is more conspicuous in proportion as the eyes are more red and affected, has often been confounded by physicians with the true purple irruption; and there have not been wanting some who have regarded the purpura rubra as a typhus fever: and to this fact, no doubt, are owing the disputes that have arisen concerning the contagious and non-contagious nature of the purple fevers.

The cutaneous exhalation which takes place during the exanthematous irruption, and which is interposed between the epidermis and the skin, is unquestionably the cause of the separation of the epidermis, and contributes, when this matter becomes dry, at a more advanced period of the disease, to the disquamation of the cuticle and to the falling off of the hairs during the period of convalescence.

But in the second case, when there are small effusions of blood between the epidermis and the skin, with a general turgescence of the cutaneous organ, they form what are called petechial irruptions, either with or without the red purple efflorescence. These petechial irruptions, which, in this period of the disease, are only very small red ecchymoses, do not belong to the essential phenomena of typhus, and are developed only in consequence of certain requisite conditions. They are not always found in cases of typhus; and in case they do occur, when the patient is suffering from the bites of the flea, they may be easily confounded with them. It often happens, also, that they are not at all remarked, unless the patient is examined with great care.

In this stage of the disease, these irruptions do not, as has been erroneously supposed by some physicians, present any signs of a contagious character, (for the typhus itself, is scarcely contagious in this stage ;) but at a more advanced period, when they become larger, and of a red colour, their contagious character becomes somewhat more suspicious. The matter, which they contain, is neither fit for inoculation, nor for the artificial propagation of the disease ; and it appears to be a general law of nature, that the animal mucus, the pus and the lymph, are the vehicles of the contagious miasmata, particularly of those which form analogous fluids in the exanthematous irruptions which they produce.

Finally, it remains to be remarked, that the exanthematous irruptions, which are peculiar to typhus, and which were already alluded to by Sauvages, occur either under the form of spots, or under the form of glandulous or tuberculous specks ; and that, as the carbuncles and the pestilential boils are the peculiar exanthemata of the plague, so are the inflammatory affections of the parotid glands more peculiar to the typhus, and have a certain connexion with the exanthematous irruption, to which we have just alluded, especially by reason of the intimate connexion which exists between the functions of the lymphatic system and the cutaneous organs. The symptomatic affections of the parotid glands, or at least the germ which produces them, exists simultaneously with the spotted exanthema of typhus.

It is true, these affections of the parotid glands are not met with in every case of typhus, but because they are not perceptible in a moderate degree of the disease, or because they are not very conspicuous, we ought not to conclude that they do not really exist; for it has been found, by the most careful observation, that these, as well as some other lymphatic glands, are really tumefied and affected with a peculiar painful tension, as is satisfactorily proved by the difficulty which the patient experiences in opening his mouth, by the derangement in the functions of hearing, by the noise in the ears, and in some cases, even where the disagreeable and painful swelling of these

glands is not perceptible, by the profuse discharge from the ears during the stage of convalescence.

After the irruption of the one or the other of these exanthemata, the typhus and its predominant character remain, for several days, almost entirely stationary. On the fifth, the sixth, and the seventh day of the disease, the exanthematous irruption not only remains the same, but the other symptoms of the disease are apparently unchanged, and the fever is still characterized by an inflammatory type. It should be observed, however, that the peripneumonic symptoms always begin to abate as soon as the exanthema makes its appearance, and that, although these affections exist simultaneously, they have an inverse relation. The catarrhal symptoms also entirely disappear in this stage of the disease.

The general progress of this septenary period deserves particular attention.

In this period, the typhus generally presents an inflammatory type, and observes, independently of the exacerbations which take place during the night, a somewhat continuous course; and if there be any regular exacerbations and remissions, they happen only accidentally, and in consequence of peculiar circumstances. The critical exacerbations, however, take place exactly at the end of the third and at the commencement of the seventh day; and subsequently, at the end of the tenth and at the beginning of the fourteenth day, and are followed by remissions.

Typhus is distinguished from every continuous and non-contagious nervous fever, by the fact that it is not subject to any periodical exacerbations of a quotidian, a tertian, or double tertian form.

## FIFTH PERIOD.

### *Of the Nervous Stage.*

Towards the end of the seventh day, there is a very remarkable exacerbation, which is succeeded by an imperfect crisis, and

by an apparent remission of some of the symptoms, which often lasts, however, but a few hours, and forms the fifth stage of this disease. At this time also, there arises a new febrile heat, without any previous chills, or rather, there is an increase of heat, during the development of which the antecedent inflammatory character, as well as the exanthematous symptoms entirely disappear.

This stage, which in the regular and ordinary course of typhus, lasts until the fourteenth day, constitutes what may be called the nervous stage, and embraces the second septenary of this disease.

All the circumstances which can authorize the terms nervous fever or nervous character, are presented in this stage of the disease, in a manner to justify us in using the denomination which we have deemed proper to apply to it. In the fifth period of the disease the nervous system is principally affected, and the general debility which had previously been only fallacious now becomes real, and so well marked that it cannot be mistaken: this, however, does not always take place. The prominent symptoms of this stage are evidently of a nervous character, though the disease still retains its constant and specific character, which readily distinguishes it from every other non-contagious nervous fever.

Every nervous state, which occurs in the continued fevers, and which has been so emphatically represented by the partisans of the celebrated Brown as being produced by debility, is generally nothing else than this nervous stage of typhus.

### *General Observations upon this Stage.*

The peculiar character of this stage of the disease is owing to the derangement of the nervous system, and may be easily understood from the following observations:

1. The inflammatory symptoms or the phenomena of irritation gradually disappear, as well as the concomitant catarrhal, or exanthematous symptoms, without however, there being a termination of the fever itself or any melioration in the state of the

vital powers. This fact is clearly proved by the development of the new symptoms, which are directly opposed to those of the preceding stage of the disease, and which arise from the derangement of the nervous system. The turgescence of the external and internal organs gradually disappears; the muscular debility increases; the pulse becomes more feeble and generally less frequent; the skin and the tongue become dry; the urine more pale and limpid, and the alvine evacuations more frequent and colliquative. The type of the fever also changes, in as much as it becomes somewhat more characteristic, though the exacerbations and remissions are not more frequent than in the preceding stages.

2. In explaining this passage to the nervous state which characterizes this stage of the disease, we may be aided by the analogy which exists between typhus and some other fevers. In fact, all the exanthematous fevers, and especially those of a contagious character, have a particular tendency, at an advanced period, to run into a low nervous state.

3. A debilitating plan of treatment, in this stage, is evidently prejudicial and dangerous; while, on the other hand, every thing of a moderately stimulating nature, though not indispensably necessary, is less hurtful, and may even be favourable to a salutary crisis.

4. Almost all the symptoms of this stage of the disease, at least the predominant ones, indicate a special affection of the nervous system. This state of typhus, however, has a peculiar character which distinguishes it from the nervous character, taken in its ordinary sense, and which, whatever it may be, I would rather denominate the nervous state than the state of debility.

The disorder of the intellectual faculties and the delirium which accompanies it, the coma, the disturbance of the sensibility, and of the muscular irritability, the tremours, the twitchings of the tendons, the convulsions, the cramps, the spasms and the other symptoms which occur in this stage of the disease, are the certain indications of a deranged state of the nervous system. These symptoms are generally developed in a slight de-

gree when the disease observes a mild and regular course; but if we should believe that these depended uniformly upon a real debilitated state of the nervous system, and that we should combat them by a stimulating plan of treatment, we should no doubt be led into error and to erroneous and, consequently, hurtful indications. Nor is it less fortunate, when, during the state of the nervous symptoms, we employ a stimulating and empiric mode of treatment, founded upon the delusive names of nervous remedies, and upon the favourite ideas of a pretended debility of the nerves and of the general excitement of the body. For it must be understood, that the true nature of these symptoms does not consist in a real debility, and in this case, therefore, as in hysteria and in the other nervous diseases, a passive, and sometimes even a debilitating mode of treatment, are best adapted to the removal of the disease. We see striking examples of this kind of nervous symptoms in cases of mania à potu, in the affections arising from the narcotic poisons, in sanguineous apoplexy and the paralysis which accompanies it, and in the numerous cases of convulsions which occur in robust and plethoric persons.

I am of opinion, however, that the nervous symptoms which accompany these different states, or even the debility which is developed in every case during this stage of typhus, do not depend upon a real debility, but rather upon a fallacious state of debility, which is generally observed in fevers in consequence of a depression of the vital powers. Such, in fact, is the case with typhus, in which the apparent debility is owing to an oppression of the vital energy, occasioned by the contagious virus, while the nervous symptoms have an entirely different source. To confirm the truth of this assertion, it will be sufficient to make the following observations:

1. In the ordinary course of this disease, the favourable crises contribute much more to the cure than any of the remedies that are employed; and, consequently, nature ought to have sufficient power to produce these crises which can only take place by the reaction of the vital powers, a fact which per-

mits us to presume that they are not affected, and that there is no real debility.

2. The salutary crises sometimes take place, notwithstanding the employment of a debilitating mode of treatment, as may be observed in the practice of some physicians, who consider this disease as a bilious fever, and treat it, from its commencement to its termination, by mild evacuant remedies, and are not always unsuccessful in their treatment.

3. The vital energy, and particularly the power of the voluntary muscles, are not more debilitated in this stage of the disease than they are, for instance, in drunkards, where there is a want of energy which is difficult to be overcome, but which is not altogether insurmountable. In both cases, the vital powers are impeded in their exercise and are merely in a state of depression.

4. In a moderate course of typhus, we may sometimes observe, during this stage, a certain fulness of the pulse, as if there were a real increase of vital energy, and which Sauvages regards, after Hippocrates, as a characteristic symptom of the disease.

This, moreover, is the period when the powers of nature act with the greatest energy to combat and remove the contagious matter, as well as to free the body of the humours which have become altered, and have already arrived at the highest degree of elaboration by the process of irritation, which marks the preceding stage of the disease. It is, in fact, like the devouring flame which succeeds a smothered fire ; and it can scarcely be denied that the chemico-animal process performs as important a character as that which takes place in the phenomena depending upon the vital powers. We may perhaps be permitted to remark that the contagious miasm, being inflamed and spread throughout every part of the body during the preceding stage of the disease, now becomes more confined to the periphery, from which it is conveyed and communicated to other individuals. For it is in this period that the power of the contagious matter is more energetic and more perfectly developed.

*Description of the Symptoms which occur in this Stage of the Disease.*

This stage, as we have already said, commences about the eighth day of the disease, and is preceded by a short and remarkable change, and by an evident relief in the symptoms of the disease.

The new scene opens with an increase of heat, which is appreciable to the touch, and highly distressing to the patient. It is this heat, or the intensity of the fever, which is the cause of the development of the new symptoms.

The tongue and the whole surface of the body become dry; the skin no longer executes its functions, and forms a focus where the heat accumulates and augments under the hands of those who touch the patient. The thermometer, however, scarcely indicates any increase of heat, which appears to be the same as in the preceding stage, and never ranges above 32 degrees of Reaumur's thermometer, nor below 102° of Fahrenheit's, a fact which proves, that the communication of caloric exercises a peculiar influence upon the actual state of the skin.

The cutaneous exanthema now disappears, while the petechial irruptions either continue to augment, or begin to make their appearance.—In the regular course of typhus, however, this occurrence is extremely rare.

As soon as the exanthematous irruption disappears, the epidermis separates, becomes dry and rugose, and impedes the cutaneous transpiration and absorption. This separation of the cuticle is attended with the formation of a new one, and is not completed until the occurrence of critical sweats, and the complete restoration of the functions of the skin.

The heat and dryness of the skin increase, and the thirst becomes more intense and distressing; the appetite is generally lost, and the intellectual faculties are obliterated, so that the patient seldom takes any drink, unless he is solicited so to do by the nurse: the state of his mouth, however, and the dryness of his tongue, plainly indicate his scorching thirst.

The deglutition now becomes difficult, partly on account of the dryness of the mouth, and partly also on account of the inactivity of the muscles of deglutition; but, by a careful examination, these organs will be found to present no remarkable change, though they are more dry, and, owing to the previous symptoms of the disease, they have lost their natural fulness.

The catarrhal symptoms which mark this stage of the disease are also dissipated; but the nasal cavities are still obstructed by dry inspissated mucus, or by the remains of a sanguineous effusion, which gives these cavities a fuliginous appearance.

The oppression at the chest also disappears, and the respiration becomes more free, and somewhat accelerated. The cough also ceases, but there is a convulsive movement of the diaphragm, which gives rise to hiccough. This symptom is rarely wanting in this stage of typhus, even in the most moderate course of the disease.

There are also remarkable changes in the intestinal canal, which has always a very great sympathetic relation with the skin. The intestines, in fact, appear to be exceedingly sluggish, though I believe that they are really in a state of excitement, and perform the suppressed functions of the skin. The fecal evacuations are frequently of a liquid nature, extremely fetid, and sometimes even putrid. The patient often experiences, also, a slight degree of pain in his bowels, which is aggravated by pressure. This pain, which is owing to an inflammatory state of the intestines, forms one of the most constant symptoms of this period of the disease, being almost invariably present, and of which traces may always be found upon post mortem examination. It is to it, rather than to the accumulation of the fecal matter in the intestines, that is owing the swelling of the lower part of the abdomen, or the tympanitic affection, which constitutes as invariable a symptom of this stage of typhus as the inflammation to which we have just alluded. It is to it, in fact, that must be attributed that disposition to dysentery which is so frequent in this stage of typhus fever.

It is possible also that the morbific state of the liver and the altered bile, which it secretes, may contribute to this state of the intestines.

In this, as in the ordinary nervous state, the urine is more abundant than in the inflammatory fevers, and instead of being red and acrid, it is pale, limpid, or somewhat turbid, and very seldom sedimentous. The nature of the urinary secretion is so extremely variable in this stage of the disease, that it is impossible to determine whether it indicates an inflammatory state.

This character of variability is in every respect similar to that of the pulse, which varies in respect to its force, its fulness and its quickness. So much is this the case in every stage of the disease, that we may remark a different pulse similar to that which is observed when the vital powers are in a state of depression or exhaustion. Notwithstanding this, it is never so uniformly weak, so quick, nor so small and tremulous as it is observed to be in cases of real vital debility. In the regular and moderate course of this stage of typhus, on the contrary, it is very frequently moderately strong, tolerably full and open, never small nor extremely soft, and what is more astonishing, it is in no relation with the debility of the vital energy. What is still more remarkable than this, however, is that the quickness of the pulse, or rather its slowness, (in consequence of which Visone has denied the typhus a place amongst fevers,) does not appear to have any relation with the increase of the heat of the body. Notwithstanding this, the pulse always presents something peculiar and almost indiscribable: it is commonly variable in respect to the force of the arterial pulsations, and the caliber of the artery has no free and perfect contraction, being rather, if we may be allowed the expression, in a constant state of dilatation, so much so, in fact, that the pulse appears to be in a state of depression. In the blood itself, however, there seems to be an irregular agitation which resembles the action of ebullition, or the peculiar noise which is observed in certain cases of aneurism. By a careful examination, this phenomenon may generally be observed, during this stage of the disease.

The most important morbific phenomena of this stage of typhus, are unquestionably those which constitute the nervous state; and though they should have been described first, I have reserv-

ed them for the latter part of this section, in order to give a more detailed account of them.

This nervous state, which is invariably present, constitutes one of the essential symptoms of typhus and depends upon the nature of the contagious virus, which exercises a peculiar influence upon the brain during the whole course of the disease.

In the preceding stage, this affection consisted principally in the depression of the external senses, in the stupor and disorder of the intellectual faculties, in insomnolency and in a slight derangement of the voluntary muscles. In this stage, however, all these symptoms become more aggravated and assume various modifications.

The vital powers become apparently very much depressed; but, as I have already said, this apparent debility is merely a want of activity, which, as in cases of inebriation, it is difficult to overcome, but which may, notwithstanding, be surmounted by proper and well-directed efforts. The involuntary movements of the muscles appear to increase in proportion to the debility of the voluntary movement; and hence arise a number of distressing symptoms, such as tremours, twitchings of the tendons, slight convulsive motions and different kinds of spasms, particularly in the muscles of the neck and in those of the bladder. These symptoms by no means always depend upon an increased erethism of the system, as is proved by the fact, that they are generally present when the nervous system is in a state of depression—a state, which is generally peculiar to this disease.

In this state of the disease, the external senses become more unequally depressed, the difficulty of hearing augments, the sight becomes dim, and the sense of smell, of taste, and of touch, as well as every kind of feeling, is almost completely obliterated.

Thus, the impressions of the external senses being imperfectly received by the sensorium, the patient, instead of sleeping, experiences nothing but distressing dreams, and when in a semi-dormant state, he makes incessant gesticulations, and talks in the most singular and incoherent manner, concerning the objects which surround him and which he is unable to distinguish from his internal impressions.

It is singular how a striking impression, and the fixed and fantastic idea which it creates, will incessantly torment the patient during the whole period of the fever, and frequently cause the most dreadful anxiety. During the septenary stage of an attack of typhus, my mind was constantly engaged in removing an awkward ornament from my stove, which stood directly opposite to me, and, being of course unable to remove it, it tormented me in the most cruel manner. One of my pupils, who, having been taken with an attack of typhus a short time previously, had assisted at the opera, called the Mirror of Arcadia, performed, during the whole septenary of the nervous stage of typhus, the character of viper-catcher; and as he was obliged to swallow these disgusting reptiles, he experienced the most inexpressible anxiety. Another laboured under the painful and fantastic idea, during the whole course of his disease, that he was not only suffering for himself, but for all his comrades in the clinical ward.

It is by this that we are enabled readily to distinguish the state of the phrenetic stupor of typhus from every other state that has any resemblance to stupor or inebriation, in the latter of which there is seldom that fixed and distressing idea.

It is remarkable also, that, even when this distressing idea is not present, the patient never, or at least very seldom, recollects when he gets well, what has happened during the disease, and especially during the nervous stage. It would appear reasonable, however, to suppose, from some of his symptoms, that the patient had still some knowledge of what was going on, or at all events that he enjoyed some lucid intervals; but, notwithstanding this, he is in a constant state of delirium, and whenever he does any thing of a rational nature, it is during his sleep. I believe, therefore, that I may justly compare this to a state of somnambulism, and that the continual insomnolency, or the unrefreshing sleep, added to the stupor of the patient, is the principal cause of this and of many other phenomena. I was informed that when I was in a state of delirium, I had some lucid intervals, and that I conversed rationally with my physician, concerning the nature of my dis-

ease, but of these circumstances, I have not the least recollection. Generally speaking, the patient in this stage of the disease, will converse rationally, and give proper answers to such questions as are put to him—a fact, which is not usually remarked in other febrile deliria, and especially in that which arises from inflammation of the substance of the brain.

Amongst the numerous facts of this kind that might be related, I will merely mention that of a Galician Jewess, of whose case I have always had a striking recollection. This woman had a very great desire, during her attack of delirium, to see her son. Upon his arrival, she received him with the greatest tenderness, and bathed him with her tears: during the rest of her fever, she took nothing but what came from his hands; and, when she got rid of her delirium, she was astonished at his presence, asked the reason that had induced him to come, and felt, for the first time, the real joy of a mother, in an agreeable state of surprise.

Besides, although in this stage the delirium is considerably greater than during the preceding, it is worthy of remark, and of the particular attention of the psychologist, that, even in this confused state, the most noble faculties of the mind are often but slightly affected, and the patient is more capable of forming a correct judgment, in proportion as his memory is weaker.

Finally, what concerns the desires, or the direction of the will, depends here, as in every other case, upon the state of the mind; the movements of which, are, unquestionably, more in accordance with the interior, than with the exterior impressions. Notwithstanding this, however, the mind is generally depressed, and the desires are in a state of inertia, analogous to that of the muscular powers. Both these affections, are caused by the contagious miasm, and in every state of the disease, by the continual stupor, or probably by the state of compression of the sensorium commune.

This indifference of the patient, suffering from typhus fever, to every surrounding object, is so remarkable, that he is perfectly regardless of his own situation, having no anxiety for his

recovery, nor attending to those duties which he is called to perform by the instincts of nature.

There is, therefore, perhaps no disease, except apoplexy and phrenites, in which the patient is less sensible to pain, and so truly indolent, and in which he dies with less pain and regret, than in typhus. He is, as it were, a mass without desire and volition, being occupied only with the present, without any reflection on the past, or any anticipation of the future. His attendants, moreover, are constantly obliged to urge him to take such things as may be useful, and to abstain from such as may be injurious.

The stupor, then, in all its different degrees, is, generally, the most essential, the most characteristic and constant symptom in every stage of this disease. It is, as we have already said, perfectly analogous to intoxication; and upon it appear to depend all the other symptoms of the disease which distinguish the affection of the nervous system.

This stupor, which is very clearly manifested by the indifference of the patient to surrounding objects as well as by his carelessness and want of motion, establishes at first sight, even in the eye of the empiric, a certain diagnosis of typhus, which is frequently distinguished in the hospitals by this symptom alone, amongst a host of other diseases.

These symptoms which we have now enumerated constitute the characteristic signs of the fifth stage of typhus, and remain the same at the eighth, the ninth and the tenth day, nor are there any other remissions than those which follow the slight evening exacerbations.

At the end of the tenth day, there is a very strong exacerbation. The febrile heat, as well as the nervous symptoms increase in a very remarkable manner, and are succeeded, after a slight perspiration, a copious alvine evacuation, or a discharge of urine, by a remarkable remission, which is more sensible on the eleventh day, and is manifested by a renewal of the febrile heat and a considerable degree of nervous affection.

There are cases, however, of the moderate and regular course of typhus, where the symptoms of this stage are much milder

than we have here described them. I have seen patients, who could sit up during almost the whole period of the disease, or at least, several hours a day. Their stupor was extremely slight, notwithstanding which, they were in a constant state of revery—which justifies what we have already said concerning the state of the sensorium commune. In these cases, the slight degree of febrile heat and the derangement of the vital energy, are, however, in fact, the only symptoms by which they can be distinguished from the most severe cases of typhus.

## SIXTH PERIOD.

### *Of the Critical Stage.*

The disease which, during the seven days of the preceding stage, had arrived at a certain degree of intensity, now very rapidly declines; and undergoes, without the resources of the healing art, a change which decides the fate of the patient, and which, in the regular and moderate course of typhus, leads, unless impeded by some obstacle at the moment that the crisis is about to take place, to the perfect reestablishment of health.

At the end of the thirteenth day, there is generally a violent exacerbation. The fever evidently increases, the heat becomes more acrid, the pulse more strong, the brain is apparently more affected, and there supervenes a peculiar soporous affection. Towards the twelfth hour of this day, however, or the fourteenth day of the disease, the skin which was before dry, becomes moist, and all the exhalent vessels on the superficial parts of the body appear to open, and to become free from their spasmodic constriction: it is at this moment that the critical stage commences.

Under these circumstances the patient sometimes experiences a slight degree of hemorrhage, which affords great relief to his cerebral affections. When there is no bleeding, however, which is generally the case, the nose, which before was dry, now begins to become moist; and the black, inspissated crusts which line the anterior and posterior nasal cavities, as well as the mu-

cous substance, which is sometimes united in a very compact manner so as to fill these cavities, become detached by means of the new secretions. This seldom happens without sneezing, so that it has frequently been remarked by the vulgar that this affection is a precursor of health.

The tongue also becomes moist, and more natural and red, first towards its point, and subsequently towards its base.

In some cases, the patient has a copious expectoration, especially if the chest has been affected at an early period of the disease, and if it has been surcharged with mucus; in most instances, however, there are sputa which are derived from the posterior cavities of the nose and from the fauces, when the tenacious mucus, which was collected during the disease, now becomes detached.

In all these cases, the whole surface of the skin becomes covered with a salutary perspiration, and even with a universal sweat. And although this sweat is not always the cause of the general melioration of the symptoms of the disease, it is, nevertheless, unquestionably, one of the most powerful means; for by it the skin resumes its natural relations with the atmosphere, and recovers the functions which are necessary to the integrity and reestablishment of health, and which have been most impaired by the contagious virus.

This sweat, when it is truly critical and of a salutary nature, is generally diffused over the whole body, and is of a soft and gaseous consistence; in some parts, however, such as the forehead and the anterior part of the neck, it makes its appearance under the form of distinct drops. Its odour is of a peculiar kind, being neither very strong, nor of a very disagreeable nature.

The urine, which, during the nervous stage of the disease, was pale and transparent, and passed with much difficulty, is now evacuated with ease, becomes turbid, high coloured and more abundant, and frequently affords a great quantity of a whitish, or black, mucous deposition. Notwithstanding this, the urine deserves less consideration than any other critical evacuation.

Next to the sweats, the alvine evacuations afford the greatest and most frequent relief in the symptoms of this disease. Nothing is more erroneous than to suppose that this evacuation is peculiar to the gastric fevers; for it is well known that the intestines have the most intimate relation with the skin, which performs so important a character in typhus, and that they perspire, if we may be allowed the expression, as frequently as the skin itself.

A diarrhœa, however, is not always strictly necessary to the production of a salutary crisis, for the same effect is often produced by the discharge of fetid and aqueous evacuations.

The patient is generally able to determine the degree of relief afforded by these evacuations, or at all events, he is able to distinguish those which are of a salutary nature, and which constitute, as it were, the last stroke of the disease. A physician, whom I attended while suffering from an attack of typhus, and who was extremely pusillanimous during his delirium, announced to me his cure as certain during an evacuation in which he perceived that all his symptoms began to disappear. The same thing obtains in the pestilential typhus, where the alvine discharges are also frequently of a critical nature. The celebrated Dr. Valli, one of the professors at the university at Mantua, who suffered from an attack of the plague while at Constantinople, assured me that as soon as he experienced his diarrhœal affection, the symptoms of his disease began to abate, and by degrees to disappear.

The crises, which take place in consequence of the salutary evacuations, and in which the powers of nature have more effect than the efforts of the healing art, preserve all their rights in typhus, though these have frequently been disputed, especially in cases of considerable debility. The critical evacuations, in typhus, whether they be the cause or merely the effect of the relief that is experienced by the patient, manifest their happy effects by a striking and almost instantaneous relief. This relief is so very remarkable that it cannot be denied by any one who has ever seen or observed this disease. These sudden and salutary changes can be best observed in those cases where the

patient is in extreme danger, and where he has received no beneficial effects from the resources of the healing art.

These decisive crises, in the contagious typhus, when it observes a mild and regular course, generally take place about the fourteenth day; and are of such a nature that they either speedily restore the patient to health, or produce his death. It sometimes happens, though extremely seldom, that the salutary crisis takes place on the seventh day of the disease; in these cases, however, it is not so decisive, notwithstanding it is followed by a sensible relief on the fourteenth day. It is probable also, that in these cases, there are peculiar circumstances which interrupt and retard the crises, which would otherwise supervene on the fourteenth day, which is the period when every typhus terminates when it has not been interrupted in its ordinary course.

## SEVENTH PERIOD.

### *Of the Stage of Remission.*

The critical stage, like the stage of invasion, lasts but a few hours. When it is salutary, the stage of remission, which succeeds it, is generally observable in about twelve hours; the transition, however, from the critical stage to the reestablishment of health, is by no means so sudden. This passage takes place by means of a successive remission, which is very distinct from the convalescence itself, and which has not the least analogy to the forming stage of the disease: for in the remission we meet always with some of the essential symptoms of the preceding disease, though they are less numerous and of a less distinct character. In the convalescent stage, however, these symptoms disappear, and there remain none but the general symptoms of a common indisposition. This stage, therefore, which forms the immediate passage from disease to health, may be justly compared to the forming stage, which serves as the passage from health to disease.

It may be presumed, though it cannot be confirmed by ob-

servation, that there are in this stage of the remission, slight and insensible crises, which gradually dissipate the rest of the disease, even after there shall have been a perfect and instantaneous crisis at the ordinary period.

Notwithstanding this, it is by means of this crisis that the symptoms of the disease experience so striking and rapid an abatement; and upon it, moreover, depend the remission of the disease, and the abatement of the most intense and dangerous symptoms, as well as the fate of the patient.

The first striking symptom that disappears, is the delirium. The patient awakes, as it were from a dream, or a fit of intoxication, his head becomes free, and in some instances, he has an instantaneous and perfect recovery of his former knowledge. The memory, however, is still peculiarly affected, so much so, that the patient has great difficulty in recalling to mind the circumstances that passed before and during his illness. His astonishment is always great when he discovers his delusion.

The mind also experiences a considerable change, and the indifference which was previously observed in the patient, now begins to disappear. The eye becomes more attentive and expressive; the surrounding objects begin to excite an interest, and the patient takes more notice of what is going on; the insensibility of the soul is dissipated, and the feelings of gratitude, of love and of friendship, as well as every other sentiment of the soul, are gradually awakened and displayed in the most exalted degree.

The organs of the external senses resume their former activity, and awake, as it were, from a profound dream. The organ of hearing, however, is still as obstinately affected as during the preceding stages of the disease.

While the nervous system resumes its ordinary functions, and the locomotive powers become more energetic, the functions of the circulation are reestablished, and the pulse becomes calm, regular, and open, though it is frequently weaker than in the preceding stages of the disease; the heat and perspiration of the body become mild and uniform; the thirst completely disappears, and the drinks which formerly afforded so

much comfort to the patient, now become disgusting; the appetite becomes developed, and the sleep, though not so sound as in the healthy state, becomes more refreshing, and adds much to the comfort of the patient.

To the phenomena of this stage of the disease appertain also, a sense of debility and loss of power which is more distressing than even during the most severe stupor; a depression of bodily strength, especially of the extremities, which indicates that the stupor is about to disappear, and may, therefore, be hailed as a happy precursor; fatigue after every movement and effort on the part of the patient; a pale and hollow countenance, which indicates the disappearance of the turgescence; vertigo, and heaviness of the head, continual difficulty of hearing, and noise in the ears; debility of the intellectual faculties; frequent drowsiness and unrefreshing sleep; a white or furred tongue, with depraved and unnatural appetite; a peculiar irritability, and a disposition to costiveness and perspiration.

Such is the state which generally lasts about seven days after the formation of the critical stage, though every day dispels a new symptom, and the disease gradually disappears. The patient by degrees regains his strength, so that he is soon able, and, in fact, glad, to leave his bed; his sleep becomes more refreshing; his appetite improves; and in this manner he each day acquires more strength and spirits, and experiences a desire to resume his usual occupations.

The difficulty of hearing, and the noise in the ears, are the most obstinate symptoms; these, however, are gradually dissipated, though in some instances they persist for a considerable time.

## EIGHTH PERIOD.

### *Of the Convalescent Stage.*

In this stage, which follows the stage of remission, all the symptoms of the disease are dissipated, and the patient is restored to the enjoyment of health.

The vital powers, however, are not yet sufficiently strong, nor firmly reestablished; the body is weak and emaciated, the muscles soft and flabby, the skin is withered, and the epidermis separates under the form of scales; the hairs gradually fall off, and the nails are reproduced, which proves that they undergo some alteration during the disease, in the same as the separation of the epidermis proves the existence of a previous exanthematous irruption.

The pleasures of the senses and the desires are not only augmented, but they are greatly enlarged, so much so, indeed, that when they are gratified, they afford the most pleasing and inexpressible delight. The desire of eating amounts to a voracious appetite; and bread is the kind of food that is generally preferred. The venereal appetite is in a state of morbid excitement; and the patient who was previously like an animated mass, now becomes extremely sensible to the pleasures of the senses. We may almost assert it as a fact, that no one has ever experienced the plenitude of sensual enjoyment, who has not felt it in the convalescent stage of this disease. These desires, however, are so unnatural that they must always be attributed to a morbid state of the sensibility and irritability of the system.

Besides these phenomena, which characterize this stage of the disease, there is generally a great irregularity in the excretions, constipation of the bowels, and in the female, a suppression of the menstrual discharge.

As soon as the assimilative functions, and the vital powers are restored, the excretions are reestablished, nor can the patient be considered as perfectly well until this has taken place. It must be observed, however, that this requires several weeks; because the convalescence after an attack of this fever does not take place so rapidly as in others.

When the patient has perfectly recovered from an attack of typhus, his health is frequently better, and more permanent than it was before the disease; nor is he in so much danger of contracting the same disease, or other kinds of fevers.

Before we conclude our description of the regular course of typhus, it will be proper to observe, that cases are not unfrequent where persons who have suffered from obstinate and dangerous chronic diseases, have been perfectly cured by an attack of this disease. Doctors Vaidy and Roux, two experienced military physicians, have informed me that they have seen a case of hydrothorax and chronic gout perfectly disappear in consequence of an attack of typhus.

## SECTION FIFTH.

### DESCRIPTION OF THE IRREGULAR TYPHUS, COMMUNICATED BY CONTAGION.

As the small-pox, rubeola, scarlatina, the pestilential, and all other kinds of contagious fevers, do not always observe a regular and natural course, but may, in consequence of various causes, present many anomalies, notwithstanding the contagious miasm has, naturally, the property of producing the same diseases with their ordinary phenomena; so the contagious typhus is not always so regular, nor so natural as it has been described in the preceding section.

Hitherto we have only seen the normal state of the disease; but it is susceptible of presenting a great number of variations in which we may remark symptoms which are entirely foreign to the disease, and which establish a certain confusion in its ordinary course. In this class, therefore, I shall include the whole assemblage of the characters or forms of the disease that can be denominated complications.

The same contagious matter may, according to a great number of causes, produce different phenomena in different individuals, and give rise to the anomalies of which we are speaking. The most remarkable and common of these causes are:

1. *The predisposition of the subject.*—The disease, although always produced by a uniform contagious matter, experiences various modifications and anomalies, according as the subject is young or old, of a sanguineous or lymphatic habit, weak or strong, of a lax or rigid fibre, more or less irritable or sensi-

ble, predisposed to disease in one or more organs, or already affected with some other disease, differently influenced by different modes of living, &c.

2. *The prevailing constitution.*—All diseases, and especially those of a febrile character, receive from the prevailing constitution, as may be proved by the most conclusive observations, peculiar modifications which impress upon them the chief characters of that constitution; but of all these, the contagious fevers are much more subject to this influence than those of a sporadic nature. According as this constitution is inflammatory, or bilious, or of the nature of intermittent fevers, the peculiar character of typhus, especially in certain periods, is so much influenced by these circumstances, that the type of the disease is completely changed, and the physician is obliged to have recourse to other remedies, or to those of a more energetic nature. Every epidemic, whether it be owing to the season and temperature of the year, or to any other cause, likewise holds under its dominion not only the contagious typhus, but all other diseases which are developed during the same time; when the prevailing diseases, however, present nothing peculiar in their character, the typhus generally remains more or less simple and regular.

3. *Unfavourable influence.*—This may result from the habits and regimen of the patient, as well as from the accidental phenomena which arise from various causes and actions, and modify or alter the character of the contagion or even of the typhus itself when already developed. Under these circumstances it is not difficult to lose sight of the influence of these peculiar causes, and to have recourse to an improper mode of treatment.

If these causes act separately, or as is most commonly the case, simultaneously with the contagion, which is the principal cause, the disease will assume as many anomalies, as the different causes may exert upon it.

In order, therefore, to give a correct idea of the anomalies which occur in the different stages of typhus, and to point out the diagnosis of this disease, considered in respect to its

different forms, I shall endeavour to give a succinct description of those which are of the most usual occurrence.

### *Of the Anomalies in the Forming Stage, and in the Stage of Invasion.*

In these two stages of typhus, the symptoms differ but little from those of the ordinary and regular course of the disease, and instead of presenting any thing peculiar, they merely indicate a general febrile affection.

In the forming stage, particularly, where we can scarcely determine the ordinary and primary symptoms of the disease, as well as their duration, the anomalies can hardly be said to exist.

During the stage of invasion, however, there is generally, an increase in the chills or in the febrile heat; though it sometimes happens that the chills do not last longer than in the ordinary course, or they are so slight that the disease is characterized from its commencement by a remarkable febrile heat; while in other cases again the chills last several days or return at intervals, as in cases of intermittents.

### *Of the Anomalies in the Inflammatory Stage.*

The anomalies in this stage of typhus are so numerous and striking, that the disease is frequently changed, so that it is extremely difficult to establish its diagnosis. The modifications which it presents, are almost innumerable; and the essential characters of the disease, by which we are enabled to determine the mode of cure, can only be remarked in the earliest part of this stage.

1. *The inflammatory character is sometimes unusually intense.*—The fever, which is developed in the early part of this stage, under the form of an inflammatory catarrh, appears subsequently in the form of a severe synocha.

This synocha consists in an excitement of the vital powers, in

a kind of general plethora, and in an inflammatory disposition of the mass of the blood, unaccompanied by any predominant local affection.

In some cases, however, there are violent local inflammations, in which are concentrated, as it were, the sufferings of the patient and the peculiar phenomena of typhus.

In the head, this inflammatory state is frequently so intense that the delirium assumes a phrenetic character, and the stupor is converted into apoplexy. I have seen cases also in which the inflammation of the fauces and of the parotid glands has amounted to a very high degree of intensity.

In the chest, the symptoms are often distressing; the lungs are in a state of severe inflammation, accompanied with stitching pains, spitting of blood, considerable oppression and all the severe symptoms which usually occur in that local affection.

In the cavity of the abdomen also it is not very rare to find the liver, the intestines, the peritoneum, the bladder and some of the other organs in a state of inflammation.

In all these cases, the physician may easily be led into error, and take typhus for an essential inflammatory fever, accompanied with local inflammation. Many of the cases of inflammatory fever, which assume a nervous or putrid character, in consequence of improper treatment, as well as certain symptoms arising from a stimulating plan of treatment, have their origin in this error and in the careless observation of the disease.

In this stage of the disease, the anomalous symptoms are sometimes so complicated that the most experienced practitioner may misunderstand the true diagnosis. The signs of typhus, in fact, are so obscured by the predominant symptoms of the inflammation, that it is not only difficult but almost impossible to distinguish it, especially when the physician is only guided by a mere superficial knowledge of the semeiosis. Typhus, thus misunderstood, is designated under the erroneous denomination of inflammation of the bladder, of the lungs, the liver, the intestines, and other organs.

The suspicion of the existence of a contagion, the unusual length of the forming stage, the stupor and vertigo, the noise in the

ears, the essential exanthema, and the other symptoms which it is not easy to describe, and which can only be distinguished by a careful and attentive examination, are the peculiar and characteristic signs of this disease. After the seventh day, these signs are always more distinct, in consequence of the diminution of the inflammatory symptoms.

The causes of this anomaly, then, consist, in great measure, in a plethoric disposition of the patient, and in local inflammations, or in a prevailing inflammatory constitution, in the actual existence of an inflammatory fever, in a stimulating plan of treatment, and in the immoderate degree of heat of the apartment.

2. *The symptoms of the disease are frequently owing to a prominent gastric character.*—The continual nausea, and repeated vomitings, the bitter taste in the mouth, a furred tongue, oppression in the epigastric region, constipation and pain in the bowels, fetid alvine evacuations, and other symptoms, not unfrequently give to typhus, in this stage, the appearance of a bilious fever: so fallacious, in fact, are these symptoms, that the most experienced physicians are sometimes led into error. The passage of the bilious fevers to the nervous or putrid state, is owing to the absorption of the bile, to the debility of the system, as well as to other causes, and should not by any means be attributed to a contagious property.

By a careful reflexion upon the essential characters of typhus, it will be easy to distinguish it, even in the midst of the gastric symptoms to which we have just alluded. In some cases, however, the diagnosis is difficult, and cannot be rendered clear until the seventh day of the disease, when the nervous character begins to predominate.

The causes of this anomaly are, a state of irritation of the gastric system, occasioned by the contagious matter; a kind of sympathy between the stomach and the head, which, in this case, is principally affected; a considerable degree of irritation of the liver, which performs so important a part in this disease; the influence of a prevailing bilious epidemic; and, in short, a gastric complication, which is developed during the forming

stage of the disease, or even during the disease itself, whether it be occasioned by some irregularity in diet, or by overloading the stomach with medicines or drinks.

3. *The exanthema is either entirely absent, or it is altered in different ways.*—There is, generally speaking, no symptom which is so variable and subject to so many irregularities as the exanthema. This, therefore, will, probably, always present a great obstacle to the classification and systematic arrangement of the exanthematous fevers; for it is well known that the exanthematous irruption in typhus presents as many varieties and modifications as there are species.

In typhus, the peculiar exanthema of this stage, is sometimes entirely absent, or it is so concealed by the skin, that it can only be perceived by the most careful examination. In some instances, it makes it appearance under the form of a miliary petechial irruption, &c. and soon disappears. It never continues beyond the seventh day, and when it is dissipated, it does not always afford the relief which is the usual consequence in the regular course of the disease.

The causes of this anomaly in the exanthematous irruption, in fact, consist most frequently in the irregularities in diet, in the suppression of the perspiration, or in any other derangement of the functions of the skin, occasioned by cold, moisture, &c. Most of the other functions of the body, and especially those of the digestive canal, have the most intimate connexion with the skin; so great, in fact, is this connexion, that, when the skin is interrupted in the exercise of its functions, the partial crises, which succeed to the exacerbations, may be disturbed—a circumstance which does not ordinarily take place when the skin is in the full exercise of its functions.

4. *The nervous character is sometimes developed in this stage, to which it does not essentially belong.*—It presents more or less intensity from the slightest to the highest degree of vital debility, which gives rise to the premature dissolution of the body.

Notwithstanding this, however, the nervous state in this stage of typhus, is sometimes extremely slight, and consists more particularly in the absence of the inflammatory symptoms. We do

not, moreover, meet with that intensity in the vital powers which is usually observed in this stage, and which is so salutary to the future state of the patient. The tongue and the skin become dry, and, instead of the inflammatory symptoms, there is sometimes a nervous state, which is characterized by typhomania, subsultus tendinum, convulsions, spasms, partial paralyses, hiccough, and other distressing symptoms.

In this state of the disease, the already existing local inflammations may be altered, so as to assume an unnatural character. It sometimes happens also, that there is so great a degree of real debility, that the disease presents the greatest malignity, and suddenly proves fatal.

This nervous state soon assumes a putrid character, even in this stage, or under the influence of a general debility, and of the relaxation of the soft parts ; the fluids become impoverished, and the blood is extravasated both internally and externally. At the same time that these symptoms take place, there are black petechial irruptions, hemorrhages, a disposition to gangrene, diarrhœa, a putrid fetor, and all the other unhappy precursors of a speedy dissolution. Under these circumstances, the disease always approaches to the character of the plague, in as much as we may sometimes observe blotches and pestilential carbuncles, the sure precursors of the extinction of life, which always takes place before the seventh day of the disease.

The causes which give rise, at so early a period, to this anomalous state, and to the nervous character, may be owing either to a peculiar disposition of the subject previously to his contracting the disease, to a stimulating plan of treatment at the commencement of his illness, or, on the contrary, to the employment of too debilitating means, such as copious bleedings, and powerful purgatives ; at other times, to the exhaustion occasioned by debilitating evacuations, such as hemorrhages and diarrhœas ; or, in short, to the irregularities of diet, the want of cleanliness, moisture, heat, and cold, but principally to a close and stagnant atmosphere, to bad and unwholesome food, and to the influence of the moral affections.

The character of the prevailing epidemic and the constitution of the air, may greatly contribute to the premature development of the nervous state. But the most common of all the debilitating causes consists in the fever, and in the alteration of the vital powers which, after having been for a long time in a state of depression, finally pass into a state of real debility, as is proved by the fact, that the vital energy which is beyond the power of development, finally sinks into a state of exhaustion, as happens in typhus fever and in fevers in general, where the debility is always fallacious from the commencement of the attack.

This circumstance is frequently the source of the malignity which is either sought for in causes entirely unconnected with the patient, or is attributed to some unhappy and foreign influence which has no existence, and cannot, consequently, be detected.

The causes, however, which in fevers, give rise to the acute scurvy, or to the state of putridity which distinguishes it essentially from the nervous character, are as yet unknown and shut up in the bosom of the Creator.

The phenomena of the putrid state do not depend upon the debility alone, and have scarcely any connexion with it. For in some cases, the patient may pass through all the grades of debility, without contracting the state of putridity; and even in some of the most remarkable cases of scurvy or of putridity, the vital powers of the patient are neither sensibly depressed, nor is he obliged to confine himself to his bed. Do the symptoms of this state depend more upon a relaxation than upon a real debility? In the chronic scurvy this really appears to be the case; but in the acute, the relaxation is probably combined with the debility.

Amongst the circumstances which give rise to the debility and favour the development of the putrid state, may be included the crowded and unwholesome air of the apartment, in which the patient is, as it were, immersed for several days in a bath of his own peculiar atmosphere, loaded with the perspiratory and pulmonic vapours, the same corruption of the air when many sick people are confined in a narrow, and unventilated apart-

ment; the want of motion, and the passive state to which he is subjected, especially when he is badly attended; the want of internal efforts in the highest degree of debility, the privation of acid drinks, the moral impressions, and a variety of other circumstances.

5. *There may be different anomalies in the particular symptoms of the disease.*—These may arise not only in this, but in fact, in every stage of the disease, as well as in every kind of fever. These anomalies in the distinct symptoms of the disease, however, seldom give rise to any essential difference in the peculiar character of this stage, and their whole effect consists in a mere modification of its form.

6, and lastly. *This stage may also sometimes present slight anomalies in respect to its course or duration.*—In some instances, for example, the inflammatory character is very short, and soon gives way, as we have already said, to the nervous character; while in other cases again, it continues beyond the seventh, the ninth, or even the eleventh day.

### *Of the Anomalies in the Nervous Stage.*

This stage of the disease is susceptible of affording as many anomalies as the preceding. The nervous character, in fact, not only amounts to the highest degree of intensity, but it likewise presents a great number of modifications and complications.

At first, it is not much unlike the preceding inflammatory character, and the local inflammations, especially those of the chest, which exist during the first stage, may likewise, according to their peculiar nature, continue for some days. These local inflammations, by their protraction in this stage, frequently change their nature and assume a distinct character of debility which augments, in a very singular manner, the tendency to gangrene.

At this time it may also give rise to nervous or septic local inflammations, which now make their appearance for the first time, and are extremely subject to variations. The most common of these are, inflammations of the brain, of the lungs, of

the liver and the intestines. The last, owing to peculiar circumstances, may frequently assume the character of a putrid dysentery, and the inflammation of the liver, that of typhus icterodes. This affection is sometimes suddenly developed, and, what is still more singular and inexplicable, it often disappears of itself. I have seen a case of this kind in which the deep yellow colour of the skin perfectly disappeared in the course of thirty-six hours, and was succeeded by the natural colour of the skin.

The gastric symptoms are not only fallacious, but they depend, moreover, upon the impurities of the primæ viæ, produced generally by too great a quantity of medicines administered during the disease.

One of the most ordinary symptoms of this disease is the presence of worms in the alimentary canal. These are generally of the species called ascarides lumbricoides, whose mode of development is so obscure, that it is impossible to say whether they are engendered before, or during the disease. It should not be inferred, however, when only one of these worms is discharged spontaneously, that there exist many others, as has been so frequently done; for, by the most careful post mortem examination, we cannot, in some instances, discover the least trace of the existence of these animals.

The diarrhœa, which is so often characterized in this stage of typhus, by frequent, copious and fetid stools, may also, in some degree, be comprised amongst the number of the gastric symptoms of which we are speaking. It appears that this diarrhœa, is, in great measure produced by the presence of the acrid bile which is secreted during the inflammatory attack of the liver; yet, I believe, as I have already had occasion to state, that a superabundance of the intestinal exhalations, occasioned by the diminution of the cutaneous perspiration, also greatly contributes to this exceedingly debilitating affection.

The exanthematous irruptions which occur in this stage of the disease, instead of diminishing, as they do in the ordinary course of typhus, present various anomalous appearances. We may observe, for instance, a continuance of the petechiæ,

or they may be seen to increase and to assume a new aspect. It is in this stage also, that the parotid glands commonly begin to inflame.

To the most frequent irregularities of this stage, belong, moreover, a remarkable increase of the debility and of the nervous character, and the development of the putridity, which is not, however, peculiar to the ordinary course of this disease in any of its stages.

The most remarkable nervous symptoms in this stage of the disease, are: a dry and parched tongue; an inextinguishable thirst, accompanied with dryness and acrid heat of the skin; a disposition to diarrhœa, attended with meteorism and pain in the bowels, which becomes aggravated on pressure; a universal tremor; different kinds of convulsions, which vary in intensity and duration; grinding of the teeth; delirium with gesticulation and carphology; a kind of mussitation; hiccough; spasms in the muscles of the jaws, the neck, and the bladder; paralysis in the eye-lids, in the muscles of the tongue, the neck, the anus, &c. &c. I have also, in some instances, observed a kind of rigidity of the fingers and of the extremities, tenesmus, a horror and dread at the sight of water, and many other symptoms of a hydrophobic character.

To the symptoms of putridity belong, moreover, the blackness of the tongue and the fuliginosity of the teeth, the disagreeable fetor of the breath, of the alvine evacuations, and of almost every part of the body; the lividity of the skin, the petechiæ or the large pestilential blotches, the carbuncles, the gangrene of the compressed parts, the passive hemorrhages of every kind, a corrupted state of the urine, the bad appearance of the expectorations, the coldness of the extremities, the clammy sweats, and other highly distressing symptoms.

The various complications existing between these different symptoms may give rise to almost innumerable modifications, which have been designated by some physicians under the names of inflammatory typhus, bilious typhus, nervous typhus, putrid typhus, dysenteric typhus, pituitary typhus, &c. The most frequent anomaly of this stage, however, depends upon

the different degrees of the nervous and putrid character, which is frequently attended with more or less inflammation, as well as upon the extremely variable forms of the disease, which give rise to different local affections.

But the ordinary course of the fever itself, which, in such anomalies, seldom terminates on the fourteenth day, is protracted, when death does not take place at an early period, to the seventeenth, the twenty-first, or even to the twenty-eighth day. I have seen several cases also in which the disease, though it ultimately proved fatal, preserved an uninterrupted course until the thirty-fourth day.

### *Of the Anomalies in the Critical Stage.*

The critical, like every other stage of typhus, has its anomalies, whether it be considered in respect to its appearance, its critical phenomena, or in relation to its consequences.

In the ordinary course of simple typhus, there is a kind of partial crisis, which takes place about the seventh day, and affords considerable relief by an abatement of the inflammatory symptoms. After a successive increase of the nervous symptoms, there is a second crisis, which occurs on the fourteenth day, and which greatly diminishes the disease, which now begins to disappear.

In the anomalous state, however, there may be many irregularities in the first crisis, which may either be entirely absent, or it may afford but slight relief, or it may, on the contrary, even produce an increase in the symptoms of the disease. Besides these irregularities, there may also be slight anomalies with respect to the critical day itself, which may either be advanced or retarded.

With respect to the period of the second crisis, which is generally decisive, as well as to those which usually appear at the end of a complete septenary, it may be remarked, that in those cases where they do not manifest themselves on the fourteenth day, they may be expected to take place on the twenty-first day. The crises which occur on the seventh, tenth, or the eighteenth

day of typhus, are seldom of a decisive nature; while those which take place on the twenty-eighth, and the thirty-fifth day of the disease, though of very rare occurrence, are as decisive as any of those which make their appearance at a more early period.

Notwithstanding this, this order of days is always much more definite in the salutary crises than in those which have a fatal tendency. In all kinds of fevers, death may happen at any period of the disease, and especially in that which is not characterized by the appearance of a crisis, which is itself irregular, on account of the fatal crises commonly taking place in a premature or tardy manner.

The causes which retard the salutary crises of the fourteenth day,* are extremely numerous. The most remarkable are: first, the different kinds of local affections, especially those of the lungs and of the intestines, which greatly oppress the vital powers, and are more opposed to a salutary reaction than even the different affections of the brain; secondly, a debilitating plan of treatment which gives rise to a real debility, and impedes the critical efforts of nature; thirdly, spontaneous evacuations, passive hemorrhages, diarrhœa, or other epigenomenous and debilitating symptoms; fourth, and lastly, a stimulating plan of treatment which increases the orgasm of the fluids and their resistance against the action of the vital powers, which are so much depressed, that they become finally exhausted, and are succeeded by the greatest degree of debility, which is in direct opposition to every salutary crisis.

The physician, therefore, during the inflammatory stage, should never lose sight of a suitable plan of treatment, and of the proper management of the vital powers, upon which depends the welfare of his patient during the remaining stages of the disease. For it is well known, that it is extremely difficult to meliorate the vital powers, when the treatment has been of an improper and injurious nature.

* In the fevers which are essentially contagious, there are never any examples of a premature crisis.

Besides the anomalies which have already been pointed out as belonging to the critical stage of typhus, there are a variety of others, in which the critical evacuations especially hold a conspicuous place.

The changes which supervene in the urinary secretions during the existence of this disease, are perhaps less to be depended upon than any other critical evacuation: for the farther the fever recedes from the inflammatory type, the less, in general, will the urine serve as a characteristic sign. In the critical stage of typhus, therefore, the urine is never seen to differ from its natural state, or if it does, it will be found similar to that which is discharged during the preceding stages of the disease.

It sometimes happens also, that the alvine evacuations during the critical stage of this disease, are neither different in their quantity nor quality, and leave us in doubt as to their critical nature.

The critical sweats are also sometimes, though seldom, wanting; and though there is no perspiration, and the skin retains its previous dryness, the patient nevertheless begins to get well; and the spasmodic constriction of the cutaneous exhalent vessels gradually disappears, without there being, however, any remarkable exhalation.

The ordinary critical exacerbations are frequently so imperceptible, that the physician is unable to determine to what symptoms he ought to attribute the relief of the patient.

The causes of this anomaly are so obscure, that it is generally impossible to distinguish the critical symptoms. Be this, however, as it may, it is certain that the irregularities in the crises, especially in those of a salutary nature, are rather unfrequent, and that they do, in all probability, often exist only in the mind of the careless and inattentive observer.

With respect to the consequences of the crises in typhus fever, all those may be said to be anomalous which have not an immediate bearing upon the health of the patient. The miasm of contagious typhus, like that of the small-pox, the measles, and of other similar diseases, is of such a nature, that it may be easily overcome by the efforts of the vital powers, especially

if there be no obstacle. Thus, in the natural course of the disease, when there is no extraordinary alteration in the power of life, the patient is always restored to the enjoyment of health; and the number of those who get well, is generally much greater than the number of those who succumb.

Every unhappy crisis of contagious typhus, whether it terminates immediately in death or in any other fatal disease, constitutes what is called an anomaly in the effects of the crisis.

We shall consider the causes, and the different modes of this unfavourable termination in a subsequent part of this treatise.

### *Of the Anomalies in the Stage of Remission.*

When there are no irregularities during the preceding stages of the disease, or when there are many when the disease is at its highest degree of intensity, it sometimes happens that the stage of remission is far from being regular. The anomaly may consist either in an extraordinary and protracted course, or in some unusual symptoms.

The anomalous course of the remission of the fever is always very protracted, and never short or accelerated. If the vital powers are considerably depressed in the preceding stages, and, if instead of a decisive crisis, there are several slight and imperfect ones, the progress of the remission will necessarily be slow. In general, there is a distinct intermission, between the convalescence, properly so called, and the close of the preceding stages of the disease.

If the remission of the fever, however, be premature, and if it be not attended with immediate health, it is liable to terminate in some other disease.

The most common symptoms which are observed in this anomalous remission, are, the continual stupor, occasional delirium, disturbed sleep, deafness, dryness of the tongue, thirst, want of appetite, the affections of the chest or abdomen, obstinate tympanitis, derangement in the excretions, a slow and feeble pulse, a slight degree of fever, and loss of muscular power.

In this stage of the remission, when the disease does not terminate in health, but in some other disease, we may frequently remark a number of new symptoms, especially internal metastases, which always prove fatal, either immediately, or at a subsequent period of the disease.—We shall give a more full account of these symptoms when treating of the different terminations of typhus.

The inflammatory affection of the fauces which is sometimes observed in this stage of the disease, cannot, in my opinion, be considered as metastatic.

Finally, there are not wanting cases in which, after the stage of remission, there is a development of a new contagion, which gives rise to a relapse. When this takes place, the new symptoms are united to the preceding phenomena, and instead of a remission, the disease augments in intensity and danger.

### *Of the Anomalies in the Convalescent Stage.*

The term convalescent is applied to that stage of the disease in which all the essential symptoms are completely dissipated, and in which the general symptoms of the rest of the disease gradually disappear, until the functions are at length completely reestablished.

The convalescence, after an attack of typhus, may be rendered difficult and imperfect, and, consequently, anomalous, in a variety of ways.

Many patients, during their convalescence, remain for a long time afflicted with that disagreeable state of inebriation which accompanies the disease; their nights are generally spent in unrefreshing sleep; their appetite is bad, and their strength so much enfeebled, that they are scarcely able to leave their bed, and can only walk the room when supported on the arm of an attendant; they labour under profuse sweats, and the unpleasant effects of constipation of the bowels; and, although the disease is completely dissipated, they are generally impatient, and recover but slowly their ordinary vigour and strength.

This does not only happen when the disease presents many

anomalies in its different stages, a great degree of debility, and a long duration, but likewise, when typhus observes its ordinary course. The least irregularities in the diet of the patient during his convalescence prevent the rapid increase of the vital powers, and I have seen examples also where this was rendered extremely difficult, in consequence of the influence of the moral affections, even after a regular and ordinary course of typhus. The ulcers from blisters, and the wounds of the different parts of the body that have been subjected to pressure, are also not unfrequently a great obstacle to the perfect and speedy recovery of the patient.

Having thus given an account of the principal anomalies which aggravate typhus, it only remains to be remarked, that this disease is sometimes so slight and its symptoms so indistinct (typus levissimus,) that the patient is able to sit up during almost the whole course of the disease, which lasts only about fourteen days, and consists merely in a slight degree of stupor, and in some trifling pains in the abdomen. These singular anomalies to which we have just alluded, are also sometimes observed in the pestilential typhus, as I have myself seen on the frontiers of Turkey, and as I have been informed by other physicians, who witnessed the plague at Constantinople, at Smyrna and Cairo.

When typhus fever is so slight and so imperfectly developed, as we have just described it, it has often been considered and treated by physicians, either as a pituitary, or as a slow and severe nervous fever.

## SECTION SIXTH.

### OF THE CAUSES AND MODES OF DEVELOPMENT OF TYPHUS

The typhus to which I have applied the term communicated, is always produced by contagion, that is, by the communication of a matter which, like all other contagious miasmata, occasions in the healthy subject a peculiar fever, during the existence of which is reproduced the germ of a similar disease.

Our knowledge of the causes of this disease is extremely limited, and in order to be able to give a correct idea of it, is absolutely necessary to treat separately, 1. Of the properties of the contagious matter; 2. Of its mode of communication; and 3. Of the circumstances under which the contagion and the development of typhus take place.

#### *Of the Properties of the Contagious Matter of Typhus.*

Every contagious miasm possesses the properties, 1, of producing a similar virus in the disease which it has occasioned; and 2, of spreading and extending itself ad infinitum, by virtue of this secondary development, that is, so long as there exists a matter capable of receiving the miasm, and of producing a new one. Both these properties are similar, by their power of reproduction, to the germs of animals and of plants; but the last property is analogous to the matter of fire, since a single atom of the contagious virus, like a spark, is capable of spreading itself ad infinitum, and of traversing, when unobstructed in its progress, all bodies that are capable of receiving it.

The virus of contagious typhus possesses both these properties.

Every contagious virus, like the germs of a plant, contains, 1, a principle of invisible power which is not evident to our senses, and which is put into action only under certain conditions; 2, a visible or sensible matter, capable of organization, or which was originally organic, and serves as an envelope to the principle to which we have just alluded.

In the contagious virus, this principle of invisible power is set into action by its contact with a peculiar animal principle; and it not only deranges the vital movements of the healthy body, but is likewise capable of reproduction. The vehicle or the appreciable matter of this principle, is a kind of animal mucus or lymph: consequently pus, mucus, tenacious lymph, and in general all fluids of this kind form the special seat of this contagious principle; while, on the contrary, the blood, the urine and the fecal matters appear to be but little calculated to receive or to fix it.

The analogy between typhus and other contagious diseases, allows us to presume that the contagious matter of typhus has in common with all other contagious matters, the general properties which we have just pointed out.

Notwithstanding this, the virus of typhus, like every other virus taken separately, has its peculiar properties.

1. In typhus, as in all other contagious fevers, the new matter is not developed in every stage of the disease, but more probably at the moment of the appearance of the exanthematous irruption. It is for this reason, undoubtedly, that in cases of typhus where there are only some exanthematous spots, the miasm is not so visibly enveloped in an animal fluid as in the other contagious diseases; notwithstanding which, the mucus of the nose and the fauces, as well as the secretions of the skin, appear to be well adapted for the communication of the contagious matter of typhus.

2. In the nervous stage of this disease, the constant dryness of the skin, which is particularly favourable to the contagion, allows us to presume, as is also proved by the most careful ob-

servations, that the contagious matter of typhus is not uniformly communicated by means of animal mucus, nor by the mediate or immediate contact of this matter, but that it is effected under the influence of an atmosphere, in which the patients labouring under an attack of the disease, are, as it were, immersed. Under these circumstances, the virus is always capable of spreading itself to a certain distance.

It must, likewise, be remarked, that the contagious matters possess different kinds of volatility, and that their power of acting, at different distances, is susceptible of numerous varieties. The virus of syphilis, for example, of hydrophobia, the cow-pox, and other diseases, is completely destitute of volatility, and cannot communicate itself to a certain distance, as is the case with the virus of typhus, of scarlatina, and some other contagious diseases, especially when it is suspended in an animal atmosphere.

3. The miasm of typhus, after having produced its effects, almost always destroys, for a certain time, the susceptibility of the system to a similar contagion. This want of susceptibility, however, lasts seldom throughout the whole period of life, as is the case with that of small-pox, rubeola, and some other diseases. In this respect, however, it has, notwithstanding what we have just said, some analogy with the virus of these diseases; while, on the contrary, it is entirely different from the syphilitic virus, which, when once introduced into the human body, always favours the development of a similar contagion.

4. The miasm of typhus appears to possess a mode of action analogous to that of the narcotic poisons, though its action is much more permanent. The essential and constant symptoms of the disease are dependant upon the action of the virus, and cannot be explained, from the nature of the chemical properties of the contagious matter, much less indeed, in as much as the chemical analysis of these narcotic poisons cannot explain their mode of action.

It is evident, therefore, that our knowledge of the nature and properties of the virus of typhus, like that of every other conta-

gious virus, and of the peculiar properties of the different germs, is still extremely obscure and unsatisfactory.

### *Of the Modes of Communication.*

The communication of the contagious matter of typhus takes place either immediately or mediately.

An immediate contagion (contagium vivum) is that which is communicated from a sick to a healthy person, by immediate contact, and, as it were, from hand to hand.

This contagion, however, is of much more unfrequent occurrence than that which is produced by mediate contact; and it commonly requires also, that the communication between the patient and the healthy person should be several times repeated, in order to be able to produce the disease, not only in its ordinary, but even in its pestilential form. As a spark of fire does not always burn, and only catches when the substance is of an inflammable nature; so the contagion, after one or more communications, only attacks those who have some susceptibility.

Immediate contact is not, however, always indispensably necessary to the contracting of this contagion. In fact, it may frequently be contracted merely by being in the atmosphere of those who are labouring under the disease; for it is well known, that the atmospheric air which surrounds living persons and warm blooded animals, is generally warmer and more abundant than it is around persons labouring under typhus, and, consequently, more hurtful.

The mediate contagion (contagium mortuum) is that which takes place by touching persons that have been in contact or communication with the patient, and who are, by this means, rendered capable of receiving and of spreading the contagious miasm to other individuals.

There are, however, many dead substances which are impregnated with contagious matter, and which, although they have not the power of communicating the contagion, either

consume, destroy, or decompose the contagious matter, or retain it so as to be incapable of spreading it to the living subject. These bodies, which are called non-conductors of the contagious virus, are the metals, the different kinds of earth, glass, and similar substances.

There are other bodies, and especially those to which the animal mucus appears to have the power of obstinately attaching itself, which have, in general, the property of communicating to a healthy, but predisposed individual, the virus which they contain. These bodies are called conductors of the contagious virus, and consist not only of animal substances, especially of skins, hairs, feathers, &c. but likewise of many of the filamentous substances of vegetables, such as cotton, hemp, flax, and all the stuffs into the composition of which they enter, as well as hay, straw, moss, and a variety of other substances.

The mediate contagion, then, may be communicated in numerous ways; but most commonly by articles of clothing, such as linen stuffs, furs, dirty bed-clothes, and even by means of the straw or the skins, upon which the patient may be obliged to lie during his illness. This fact strongly confirms the remarkable history related by Pringle, by which he proves, in the most clear and satisfactory manner, the contagious nature of the camp fever. The sick soldiers were lodged in a number of old tents, which served them as beds. These tents were afterwards sent to Ghent to be repaired, and for this purpose twenty-three men were employed, seventeen of whom were attacked with the disease, and died, without having ever had any communication with the sick.

The mediate contagion is of much more frequent occurrence, and more capable of spreading the disease, than the immediate; and it is very probable also, that it may, as it is customary to say, develope its effects when received from first, second, and third hand.

## *Of the Contagion itself.*

The immediate contagion takes place only in consequence of certain requisite conditions, which consist in touching or approaching a person labouring under an attack of typhus; while the mediate contagion, on the contrary, takes place by a third and intermediate body, which communicates the miasm to a healthy individual.

The contagious miasm, which is not spread immediately from a sick to a healthy person, frequently remains inactive in the dead body to which it adheres; and, like the germs of plants, it only begins to act, when its internal and hidden power is put into action by the necessary conditions of approach and contact. In case, however, these should not take place, this power to which we have just alluded, is lost, and sooner or later completely destroyed.

Experience proves that the pestilential virus preserves for a long time, and according to some, for several years, its contagious power, especially when it adheres to substances that are well calculated for its reception. The same observation may also, in some measure, be applied to the small-pox, and even to scarlatina. While visiting a patient, who laboured under an attack of scarlatina, I wore a black coat, which I carried with me, about a year and a half afterwards, from Vienna to Polodia, where it communicated to me that contagious disease, and where it afterwards spread throughout the province, in which it had before been almost entirely unknown.

Although the virus of typhus preserves for a long time its contagious property, it is difficult to determine the period in which it is dissipated. From my experience, however, upon this subject, I may venture to assert, that it does not last more than three months, because a typhus epidemic that is dissipated, and completely exhausted in the course of three months, cannot, after that period, easily reproduce itself, unless there is a development of a new contagious matter.

This contagious matter, however, as it continues to spread to different individuals, becomes gradually more feeble and in-

active, and is finally, according to the opinion of some physicians, completely exhausted, which is not, however, confirmed by my own experience.

The circumstances which occasion the inertia of this matter, are, like those of every other contagious miasm, entirely unknown. Is it owing to the contagious matter being more or less volatile? or to its being more or less readily decomposed? or is it owing to the vehicle of the contagious matter being destroyed?—These are circumstances of which we are as ignorant as we are of the causes of the duration of the life of the germ of a plant or of an animal.

Finally, in order that this contagious matter may be able to produce the mediate contagion, it is necessary that there should be, besides its presence and powerful action, as in the immediate contagion, a concourse of certain necessary conditions, 1, of heat; 2, of the introduction of the matter into the healthy body; and 3, the necessary susceptibility of the body to the contagion. If any of these conditions be wanting, it is impossible for the contagion to take place.

### 1. *Of the Influence of Heat upon the Contagion.*

Heat is extremely favourable, and, in fact, indispensably necessary to the development of every contagion; while cold, on the contrary, is directly in opposition to its production.

Heat, which performs so active a part in the development of every germ, is also extremely active in the propagation of the contagious virus. It generally imparts life and motion to this matter, and spreads it upon other bodies that are disposed to receive it; it disengages the principle, which was before dormant and concealed, from its envelope, renders it free and active, and presides thus over all its effects, which attain, under its influence, the greatest possible degree of extension, at least so far as the susceptibility of the bodies that are affected, will permit.

It is by means of heat, then, that is developed the peculiar

activity of the contagious matter; it is by heat that this germ takes root in the human body; it is by it, that the contagion extends its influence upon bodies that are already impregnated; and it is by heat, in short, that this contagion produces a new matter which has likewise the property of extending itself, or that the first virus is maintained in a state of constant expansion and activity.

It is for this reason, therefore, that in warm climates, in warm seasons of the year, or whenever the temperature of the air which surrounds those who are affected with contagion is elevated, that the violence of the contagious fever sensibly augments. It is for the same reason that the contagion extends itself with more promptitude and activity under similar circumstances; and that all bodies which are not conductors of caloric, and which are, consequently, susceptible of preserving both the matter of caloric and the contagious virus, are likewise the most proper for spreading the contagion; and that, on the contrary, the conductors of caloric are improper and unfit for its propagation.

Cold, on the other hand, or the absence of a sufficient degree of heat, is incapable either of putting the contagious miasmata into activity, or of favouring their effects: they are, as it were, in repose under its influence, and slumber for want of proper conductors. Many contagious germs are frequently destroyed in consequence of excessive cold, and are, like some of the germs of plants and of animals, completely frozen. This is, particularly, the case with the miasmata of typhus, which are sometimes so circumscribed and limited in their action, by the influence of cold, that they lose both their expansibility and their power of extension.

Cold then is the surest prophylactic means against every kind of contagion; and when employed to a certain degree it is the most sure and certain means for destroying the contagious matter that has hitherto been discovered; it either completely annihilates the virus, or it arrests its effects until it is again exposed to the influence of heat. This fact is so strik-

ing, that, if we were sufficiently careful, we might, by this means alone, prevent every contagious disease.

It is for the same reason also, that in cold climates and during the cold seasons of the year, the propagation of contagions is sensibly diminished, and sometimes completely suspended, especially when it is not, as sometimes happens, promoted by artificial heat, which may easily be avoided in the common concerns of life. This being the case, it is obvious, that every contagious fever, as well as the typhus, will be much more benefited by a refrigerant than by a stimulating plan of treatment.

Notwithstanding the observations which we have just made, it is impossible to determine the degree of heat that is necessary to put into action the contagious matter of typhus, or of any other disease. It would appear, however, that the ordinary degree of animal heat, when it is constant and uniform, is sufficient to put in motion the contagious virus, as it is in general sufficient for the activity of the germs of animals ; and, as on the one hand, a too great a degree of heat impedes its vivification, so on the other a too high a degree of cold may completely destroy it. Dr. Campbell, and other physicians, have remarked, that the atmospheric heat under the torrid zone was capable of producing the same effect.

With respect to the contagious matter of typhus, however, experience teaches us, that, that which is communicatedby a mediate contagion by means of a moderate degree of heat, is generally developed in its highest degree of activity and extension. The wearing of clothes that have been impregnated with the contagious matter, or lying in infected beds, or even upon infected straw, is sufficient to develope, in the space of an hour or more of a uniform heat, the contagion in a healthy individual, especially when he has been asleep.

In the immediate contagion, the heat which is evolved by the patient, forms, as it were, the conductor of the contagious matter, and determines its vivification, its expansion and activity, especially when the reaction on the part of the person that is affected with the contagion, is too weak to resist its influence :

it is for this reason, therefore, that a feeble person, when he is exposed to a contagious miasm, is in much greater danger than one of a vigorous and active constitution; the former is always in a disposition adapted to receive, while the latter, by a superabundance of life, seems to have the power of opposing every cause of destruction.

From what we have already said, it is evident that the contagious matter can seldom spread from the dead subject, and only in those cases where the circumstances are favourable to its development.

Finally, experience proves, though it is not easy to explain the fact upon which it is founded, by any of the principles that have been laid down, that the dryness of the atmosphere is not at all calculated to favour the propagation of the contagious matter, while moisture, on the contrary, is extremely favourable to its development; nor can we explain the cause why the contagion of typhus is more rapidly developed and spread in dark than in lighted places.

2. *Of the Introduction or Reception of the Contagious Matter.*

The contagious matter being conveyed into the body of a predisposed healthy individual by means of heat, produces a contagion, or such a change in the health, that, it gives rise, after some determinate symptoms of the disease, to the development of a new and analogous matter, or rather, as we have already said, it preserves itself, in a state of constant expansion and activity, and multiplies itself in an inexplicable manner.

In order, however, that this contagious matter may take root and display its effects, it is absolutely necessary that it should be received into the body. This being the case, we shall necessarily be obliged to make some observations upon the mode in which this matter is received, and upon the necessary and indispensable dispositions of the healthy body for its reception.

The opinions of physicians concerning the manner in which the contagious matter is introduced into the human body, have

been extremely various. The absurd hypothesis which attributes the contagion to a mixture of the virus with the saliva introduced into the stomach, where it spreads its effects, ought, as it justly deserves, to be abandoned by every scientific physician; for the incontestable fact, founded upon repeated experiments, that different kinds of virus may be introduced into the stomach without any danger whatever, is in direct contradiction to this hypothesis. The opinion, that the contagious miasmata may be conveyed into the lungs during the act of inspiration, is not, however, entirely without foundation, because this passage may really serve for the transmission of the diseases of the lungs and of the trachea.

It is always with pleasure that we revert to the ancient and well founded opinion, that the cutaneous system is the essential organ of the contagion, as is proved, moreover, by the analogy which exists between artificial and local contagions. The different contagious miasmata, however, which affect the skin, exhibit the greatest possible variety of phenomena.

Many of the contagious virus will remain inactive if there be no solution of continuity of the cutaneous system, and if the orifices of the inhalent vessels are not denuded. This, for example, is the case with the virus of hydrophobia, and probably also with that of psora, of phagedenic ulcers, and of the cowpox, the effects of which will be extremely slight, if the vessels of the skin have not been denuded, or at least if the epidermis has not been raised.

On the other hand, there are many other virus, such as the virus of gonorrhœa and of syphilis, for instance, which do not require that there should be a solution of continuity of the skin or of the epidermis, and which act upon the most delicate and sensible parts of the skin.

There are others again, such as those which belong to the contagious exanthematous diseases, which appear to act upon every part of the cutaneous system, without having any regard either to the denudation or the delicacy of the skin. Notwithstanding, this contagion appears to act in a more certain and striking manner, according to the number of points of contact,

in the same manner as fire burns more readily in proportion to the number of points upon which it may have a chance of exerting its influence.

It is impossible to determine to what degree the hairs, which perform a certain character in the physiological phenomena of the skin, contribute to the transmission of the contagious virus, and to the contagion itself. Be this as it may, it is extremely probable that they have either a positive or a negative influence: for it is well known, that the syphilitic contagion can only take place in those parts that are destitute of hair; while the herpetic contagion, on the contrary, can only occur upon those parts that are well covered with it, as happens in cases of tinea capitis. In typhus, and in general in the exanthematous fevers, the parts which are not covered with hair, or but slightly so, are too unimportant to afford room for such an abundant and extensive contagion. It is to be presumed, however, although the hairs are not good conductors of caloric, that the ordinary contagion of fevers usually operates on the parts that are covered, at least it is by them principally that the virus is received. It should, nevertheless, be remarked, that the mucous membrane of the nose and the fauces is extremely well adapted to the reception of a volatile contagious matter, and that these organs themselves may, in typhus, perform an important character. The manner in which the contagion is communicated in the typhus of animals, especially in horned-cattle, greatly confirms the suspicion, that the hairs perform an important character in this disease.

But if the contagious matter is always communicated in this or in any other manner, by the cutaneous system which receives it, as well as the first germs of the disease, there ought to be a previous disposition on the part of the body to favour the elective attraction existing between that organ and the contagious virus; and here naturally arises the question, what are the changes which supervene in the organic activity of the skin, as well as in the other parts of the body, and in every part of the vital system? or in other words, in what consist the lesion of

the vital functions, and the primitive and secondary changes which take place during the contagion itself?

If the explanations of the physiological phenomena of the cutaneous organ, are vague and unsatisfactory, its pathological condition, which arises from an invisible material, is still less comprehensible and explicable. As yet we have no precise theory of contagion, and probably never will have, while physiologists continue to explain the functions of the animal economy, by vain and unmeaning expressions. In fact, they have never given us even a satisfactory explanation of the functions of any individual organ in the body, not even of those of the skin, which can be so easily examined both in its healthy and diseased state. This pathological state, to which we have just alluded, though much involved in obscurity, may, however, at some future period, contribute to throw light upon the physiological functions of the skin, and lead to more favourable and satisfactory results.

The phenomena of every impression upon the cutaneous organ, and, consequently also, the pathological phenomena of the impressions of the contagious matter, may, in general, be considered in two different ways: 1. All the impressions of this kind, and especially the local impressions which are exerted upon the skin, extend to a greater or less distance, in proportion as they are superficial, and are sometimes conveyed to the most remote regions. 2. They are carried into the inmost recesses of the internal organs which have any physiological relation with the general system of the skin, and from whence they may, by means of their ordinary secondary effects, be conveyed to all the other systems of the body.

The properties which are enjoyed by the affections of the cutaneous organ of extending to the superficies, are amply confirmed by the successive and sometimes unlimited extension of certain diseases, such as erysipelas, herpes, and other affections. The same is also sometimes observed in the common local irritations of the cutaneous system, which extend successively over the whole superficial part of the skin.

From these facts, therefore, we may presume that the irritation peculiar to the contagion, may extend in a variable space of time over every part of the skin, and that its first, and perhaps its principal effect, is to pass from the point where the first impression was made, as from a particular centre, to the general surface of the cutaneous organ, in the same manner as the divergent rays of a luminous body are carried towards the periphery of another.

The manner in which the morbific changes take place in this case, is still unknown; yet it would appear that the necessary relation between the atmosphere and the cutaneous organ is deranged, and that the equilibrium of the functions of this organ is interrupted. Should it ever be proved that the general system of the skin is the generating organ of animal heat, and that the lungs are the organs producing cold by means of respiration, it will be no longer difficult to explain the changes which supervene in the skin, in consequence of the contagious irritation, or at least the fever which is developed from its effects.

The morbific impressions of the skin produced by the effects of the contagion, are communicated to the internal and neighbouring organs, especially to those which have an intimate physiological relation with the cutaneous system, such for instance, as the lymphatic vessels, the nerves, and the lymphatic glands.

As yet, physicians are ignorant of the changes which supervene in the organs during the contagion, and of the anomalies which affect the vital powers. It is not necessary, however, to have recourse to a pretended absorption of the matter, or to a septic fermentation, in order to be able to comprehend the development of the contagion; for this may take place when the skin is morbifically affected from the effects of a contagious impression, and when the perspiration and absorption are either in a state of ingravescence or diminution. All the functions which are either immediately or mediately dependent upon the skin, are consecutively deranged, until all the other systems

become affected with disease. The contagious matter is probably distributed through the body, in the same manner as heat and electricity; so that we are not obliged to seek for its explanation in the action of the vessels, or in its volatility: for there is, moreover, a well founded suspicion, that every fever, and especially the typhus, is dependent, in great measure, upon a derangement of the animal electricity. All this, however, is mere conjecture, the farther pursuit of which will necessarily lead the mind into error, and into the dark mazes of an impenetrable labyrinth.

It is of little consequence, therefore, to the practitioner, whether this disease consists, as has been asserted by Hartmann, (1) in a deoxidation of the skin, or whether it depends upon an alteration of the sensibility and irritability, or whether, in short, it depends, as is most probably the case, upon the debility of the animal system, accompanied with a diminution of the muscular and sensorial powers.

### 3. *Of the Necessary Disposition.*

Besides the circumstances that have already been mentioned, both as necessary to the morbific action of the contagious matter, and to the contagion itself, it is absolutely necessary that there should be in the healthy human body a certain capacity or disposition, without which the contagious disease cannot be developed, and which has for this reason, been called the *necessary disposition.*

As in small-pox, rubeola, scarlatina, and even in the venereal contagion, this disposition is indispensable, so it is likewise absolutely necessary to the contagion of typhus. This disposition does not, however, exist in all persons, nor is it present at all seasons of the year; yet it may be remarked, that there are some who are at various periods extremely susceptible to the disease.

(1) Med. Chir. Zeitung, No. 45, 1807.

In what conditions of the body this susceptibility consists, neither reason nor the theories of our art, are capable of explaining. The manner in which the cantagion itself is communicated, is too imperfectly known, to enable us to ascertain the part that is performed by the healthy organs in its production, and consequently, to determine in what manner the whole body participates. Observation and experience, however, have furnished us with some interesting results, which it may not be improper to mention.

In respect to age, it may be stated, that young or middle-aged persons, are those who are most disposed to the contagion of typhus. It must be remarked, however, that children and small infants, who contract all kinds of contagion with a great degree of ease, are rarely affected with typhus, even when they are constantly with their mothers or nurses, who are suffering with the disease, or have been afflicted with it a short time previously. Are the symptoms and course of typhus in infants so obscure, that they cannot be recognized? Old, lean, and wrinkled people are likewise rarely, if ever, attacked with this disease, nor do they appear, according to my own experience, to be at all subject to it.

As regards sex, there appears to be no remarkable difference in the susceptibility of contracting typhus, or any other contagious disease. It would seem, for reasons that will soon be mentioned, however, that women are more subject to it than men.

With respect to the state of the body, it may be remarked, that weak and delicate persons, and those who have a fine and lax skin, are generally the most subject to this contagion; while those, on the contrary, who are of a robust, plethoric and vigorous constitution, are rarely affected.

In relation to diet and the mode of living, it may be stated, that all persons who have been weakened by abstemiousness, are particularly subject to the contagious typhus. The privation of strong drinks, the effects of hunger and cold, the moral affections, fear, anxiety, and grief, as well as numerous other affections, are extremely well calculated to give rise to a pecu-

liar susceptibility to this contagion. It is, for this reason, therefore, that persons should never visit patients who labour under an attack of typhus, with an empty stomach, in a cold and humid temperature, and under the fear of taking the contagion; because it has been proved by ample experience, that such persons are exceedingly liable to contract the disease. It is for this reason also, that persons who travel during cold and rainy seasons, are likewise extremely liable to take the disease, especially when they are obliged to sleep in beds that have been infected with the smallest quantity of this contagious matter. Those, on the contrary, who drink wine and brandy, smoke tobacco, are gay, and courageous, are but seldom subject to it; because the body, being in a state of warmth and excitement, is capable of reacting upon all such occurrences, as might, under other circumstances, exert an unfavourable influence. From this, it is obvious, that it must be less dangerous to visit patients labouring under an attack of typhus, after having taken something to eat, a glass of wine or brandy, after smoking a cigar or a pipe of tobacco, especially, if with all these, the mind is cheerful and unruffled. It is for this reason that stimulating remedies have for a long time been regarded as more sure anti-pestilentials than most other debilitating means, such as the continual spitting at the bed-side of the patient, and even the employment of vinegar; although with respect to the latter, it must be remarked, that it has the power of neutralizing the contagious miasm, and that it cannot be disputed, that it possesses the property of contracting the pores of the skin, and thereby enfeebling its susceptibility to the contagion.

The disposition of the skin of a healthy individual, may likewise, so far as it depends upon the mode of living, and the various functions of the body, present a great influence upon the susceptibility to the contagion; for it may be greatly favoured both by its roughness, its hardness, and its want of cleanliness: with respect to cleanliness, however, it must be remarked, that filthy persons, such as chimney-sweeps, and those whose skin is impregnated with greasy substances, &c. suffer but seldom

from the contagion, because the virus is, as it were, repelled, and cannot traverse the filthy substances which surround the skin.

From this, it is reasonable to infer, that in order that the whole skin may be rendered susceptible to the impression of the contagion, it will only be necessary to wash it with warm water; yet even this, as well as other means of cleanliness, may completely resist an incipient contagion.

The susceptibility of the body to contagion, is frequently destroyed by previous diseases; yet persons who have been weakened by other diseases, especially by nervous affections, succumb easily under the influence of every contagion, and consequently also under that of typhus; while those, on the other hand, who are subject to chronic affections, suffer in general, but seldom, from its effects. Amongst the many hundred cases of typhus fever, which have come under my treatment, there has not been a single instance of persons labouring under phthisis pulmonalis, that were attacked with this disease. Is it possible that a suppuration may have the power of diminishing the susceptibility of the body to the contagion? This question will be examined in another part of this work.

Be this as it may, the typhus belongs to the class of contagious diseases, which, when once dispersed, diminish or even destroy, if not always, at least generally, the susceptibility of the system to the same disease. Hence it follows, that persons who have experienced the disease, may again expose themselves, without the least danger, to the contagion; while those who have never had typhus, show the greatest susceptibility to the contagion, and speedily contract it: they are sometimes so saturated, that they finally become insensible to its action. This is frequently seen to be the case with physicians, surgeons, ministers, and nurses, who, after having had an attack of this disease, brave the contagion without the least danger of again contracting it: the same thing obtains with respect to the typhus of horned-cattle.

Sometimes, however, the typhus, like the plague, destroys

the susceptibility to the same disease, only for a few months or years; and it is upon this fact, that some physicians have founded the unhappy idea of inoculating these diseases. We shall appreciate, in its proper place, the value of this opinion.

It is impossible to explain the manner in which a contagious disease can, for a certain time, destroy the disposition to the same contagion; nor is it possible to tell how it happens, on the contrary, that there remains for a long time, a morbific diathesis, and a tendency to a relapse, in certain non-contagious diseases; nor do we know to what must be attributed, in other contagious diseases, as in syphilis, for instance, the development of that peculiar disposition to a return of the same phenomena.

If we knew how it happened, that the human body becomes accustomed sooner or later to certain stimulants, so as to be no longer capable of experiencing the least impression, we should then, perhaps, be able also to comprehend how it happens, that certain misasmata, to which nature appears to become soon accustomed, finally lose their effect, so as to be incapable of occasioning any hurtful impression or irritation.

This general rule, however, presents many exceptions, especially in typhus; for persons often relapse soon after an attack of this disease. I have seen a case, where the patient, who had been affected several times with the same disease, relapsed from the very commencement of her convalescence, and who, three weeks after her second convalescence, was attacked for the third time, and died on the fifteenth day of her disease. In other cases, however, I have observed, that when the disease was produced by a new contagion, it was much slighter than the first attack.

Besides the circumstances which we have related, and which appear to be the principal cause of the susceptibility to the contagion of typhus, there are other certain unknown conditions which render some persons exceedingly prone to the contagion; while there are others, who are never predisposed to this disease, and who can expose themselves with as much impunity to

its influence, as some persons can to the small-pox. These peculiarities are called idiosyncrasies, or indispositions—denominations which only attest our ignorance. The partisans of excitement, have endeavoured to explain this condition, by the exhaustion of excitability; this, however, explains nothing, nor is there any theory, which is so incapable of explaining the properties of contagious diseases, as that of excitement.

## SECTION SEVENTH.

### OF THE TERMINATIONS OF THE DISEASE.

Contagious typhus may either terminate in health, or in death, or in some other diseases.

The most certain prognosis of this disease is founded upon the manner in which it terminates, and the circumstances which accompany it; and it is for this reason, that we are obliged to enter into an examination of these terminations before we can pass on to the prognosis.

#### *Of the Terminations in Health.*

If the subject be young or middle-aged, of a strong and vigorous constitution, and not debilitated by previous diseases, nor predisposed to any affection in any particular organ; if the typhus is simple, and regular in its course, attended with moderate symptoms, and not interrupted by a bad plan of treatment, or an improper regimen, then it is, that the disease will easily terminate, like many other exanthematous fevers, in the most perfect and durable health.

This passage from disease to health, is effected by an appropriate plan of treatment, and frequently also, without any interference of the healing art, by the mere salutary powers of nature, or by the reaction of the vital powers, especially if the

patient has not been kept on an improper regimen, and if there supervene no unfavourable, or accidental circumstances.

In this disease, our treatment can only be of benefit in an indirect manner, that is, in concert with the salutary efforts of the vital powers. No method yet known, whether rational or empiric, can cure the contagious typhus, either in a direct or in an indirect manner, nor even abridge its ordinary and natural course, which is about fourteen days. The vital powers, though they do not completely eradicate the contagious matter that has been conveyed into the body, where it continues its progress, are alone capable of eliminating it after a limited space of time, or of so changing the system, that the morbific impressions shall cease, and the salutary functions be reestablished, in the same manner as is the case in small-pox, rubeola, and other contagious fevers. Our treatment in typhus is no more specific than that of syphilis; and the efforts of our art can only be beneficial in assisting or in directing nature, and in preventing, by this means, some of the accidental symptoms of the disease.

Nature alone is capable of effecting a cure in this disease, when she is not interrupted by any concomitant circumstances, and in this case, a proper regimen, and the absence of accidental and injurious causes may concur to the reestablishment of health.

But how does nature effect this spontaneous cure? In what manner do the vital powers act upon the system, and the different chemical operations which take place in the animal economy, in order to remove the contagious matter, and to triumph over its injurious action? These are questions, which it is impossible to explain; yet may we not suppose that this matter, after a determinate time, ceases to be injurious to the animal economy, because this becomes accustomed to its presence? Be this as it may, it certainly appears that this matter is neither consumed nor exhausted, in an individual affected with typhus; but, on the contrary, multiplies, and increases, so as to be capable of producing new contagions ad infinitum.

It is certain, however, that the vital powers, which are de-

pressed by the action of the contagion, finally effect, after an effort of twelve or fourteen days, a salutary reaction, and become perfectly free and natural. Is it possible that the chemical phenomena which are developed by the contagion, and which have their determinate duration, may also contribute to this reaction? To this reaction is chiefly owing the salutary crisis in fevers, which often leads, even amidst the most unfavourable and discouraging circumstances, to a speedy and unexpected cure.

This crisis cannot so speedily and readily dissipate the contagious matter from the body, as the morbific phenomena to which this matter gives rise: it is probable, however, that it is consumed and neutralized by means of the febrile heat, which is developed during the nervous stage of the disease, and which possesses the property of augmenting under the hands of those who touch the patient, so as to give rise to that peculiar sensation, called calor mordax. It is under these circumstances, undoubtedly, that the contagious matter is communicated to those who touch the patient, though in a very slight degree.

Having already pointed out the causes and symptoms of the salutary crises and the days on which they generally take place, it would be perfectly useless to repeat them on the present occasion.

### *Of the Termination in Death.*

The termination of typhus in death may depend as much upon the bad constitution of the patient as upon the violence of the disease; it may also take place in consequence of the unfavourable circumstances which accompany the disease, and which exert an unhappy influence upon its regular and ordinary course.

The termination of this disease in death, in fact, is only produced in consequence of the circumstances which render it anomalous; for the simple and regular typhus, as well as the contagious poison, which is always the same in its nature, is not essentially mortal. This, though true as a general rule, is

not, however, always the case, for the most simple and regular typhus, may, even at the period of a decisive crisis, assume an unfavourable and fatal course.

Typhus may terminate in death in a variety of ways, according to the disposition of the patient. If the subject was already indisposed before the invasion of the disease, or if he was enfeebled from the effects of previous diseases, or, in short, if he was labouring at the time under some local affection, the disease may readily assume a fatal character.

But if in the ordinary course of typhus there supervene injurious circumstances which occasion dangerous anomalies, or an extraordinary increase in the intensity of the disease, it will prove most certainly fatal, because these circumstances may, even under the most favourable condition of the disease, alone occasion death.

Amongst these injurious circumstances may be classed, 1, *on the part of the physician*, an improper course of treatment; 2, *on the part of the patient's regimen*, every thing that may be injurious to the patient, whether prescribed by the physician, or the nurse;—a regimen which has no relation with the indications that must be fulfilled, whether it consists in the choice of air, of nourishment, of cleanliness, drink, &c. 3, and finally, *on the part of the malignity* produced either accidentally or in an inevitable manner, whether by the epidemic constitution, or by the temperature of the air, or by any other external causes, such as wounds, &c.

From these causes it may happen that the disease, which was mild and simple, may augment in intensity, become deranged and disturbed in its ordinary course, so that in consequence of a disorder either of the most important functions of the general system, or of some particular organ, the powers of life can be no longer sustained, and death must be the inevitable consequence. Under these circumstances, the salutary crises must, of course, be either imperfect or completely wanting.

Besides these, there are other unknown causes whose mode of action is altogether incomprehensible, and which often give rise to a sudden state of languor of the vital powers, or to a fatal malignity, or such a pernicious state, that death will im-

mediately supervene, without having been preceded by any dangerous symptoms. These occurrences are absolutely inexplicable, and can only be comprehended when we regard them as the result of the lesion of the vital powers.

In typhus, however, death most commonly takes place either in consequence of debility, or apoplexy. It rarely takes place from suffocation, and when it does, it is only in those particular cases where the affection of the lungs completely destroys the function of respiration.

Death from debility is particularly liable to take place in persons that have been already weakened by excessive evacuations, such as copious venesections, purgatives, diarrhœas, spontaneous and profuse hemorrhages, by an extraordinary duration of the disease, by the privation of every kind of nutritious food and drink, especially during the latter stages of the disease; but chiefly from the general exhaustion of the vital powers which have been for a long time in a state of depression, an exhaustion which may also be sometimes produced in an indirect manner, by too great an excitement.

The malignity, which is probably as often owing to the causes to which we have already alluded as to any other circumstance, may also give rise to this fatal debility.

This general vital debility, in short, may in consequence of causes altogether unknown, be frequently owing to inflammation and gangrene of the intestines. It is proved, moreover, by post mortem examinations, that the inflammation of the intestines is an extremely common phenomenon in typhus, and that this inflammation which produces death by debility, ought to be comprised amongst the fatal symptoms, especially when there are signs of gangrene.

In this general vital debility of the system, there is a deminution of the general vital turgescence, a shrinking and paleness of the exterior parts, which are particularly remarkable in the face by a peculiar physiognomic character; the eyes are dull, sunken, and half closed; the upper teeth are uncovered by the contraction of the muscles of the lips; all the sphincters are relaxed; the extremities are cold; the body is covered with a cold

and clammy sweat; the pulse is small, feeble, unequal, and intermittent; the power of the muscles is completely lost, and there is a continual tremor. Instead of the stupor and delirium, the patient is generally conscious of what is going on, and, appears to be perfectly free from pain. The remark of Hippocrates upon this state is beautifully expressed when he observes: torpor in contraria cito translabens perniciem denotat. (1)

Many physicians are of opinion that death takes place more frequently in this disease, in consequence of debility than in any other way; with this opinion I cannot, however, coincide, when I take into consideration the different phenomena which occur in the different kinds of death, and compare them with those that are observed in the dead body. I believe, moreover, that this kind of death is more frequent in the simple nervous and non-contagious fevers than in typhus.

In our post mortem examinations of subjects that have died in consequence of debility, we may easily divine what we cannot discover with the scalpel. Life has disappeared amongst the inexplicable changes of the organization, and the inanimate mass does not enable us, by the most careful examination, to discover any other phenomenon than the general relaxation of the muscular fibres.

It may be readily granted, moreover, that those who die in consequence of a putrid dissolution, likewise perish from debility. But we are not certain that this debility can alone occasion this dissolution, otherwise all the diseases that are owing to debility, without exception, would terminate in this kind of death: if we reflect, that in scorbutic persons, in whom, during the most considerable progress of the putrid dissolution of the system, the vital powers are still sustained, we ought rather to affirm, that, in this case, the debility is merely the effect and not the cause of the dissolution.

Besides these circumstances there may be others which may cause an appearance as if death had been produced by chemical phenomena, and in which the powers of life are either oppressed or exhausted by the action of different materials.

(1) Prænot, coac.

This kind of death is also distinguished from that which takes place from simple vital debility, by remarkable changes in the system, and by the phenomena which are usually observed in such cases. The fluids are aqueous, and incoherent, the muscles lax and non-elastic; from whence result passive congestions and gangrene of the parts that are exposed to pressure; extravasations into the different cavities, petechiæ and ecchymoses; a disposition to profuse hemorrhages and excretions, and the chemical development of matters that are generally observed in putrid fermentations, and the existence of which may easily be distinguished by the sense of smell.

In the dead bodies of these subjects, we may generally find traces of a putrid fermentation, which is rapidly developed in a very high degree. The cavity of the abdomen is filled with gas; and the external gangrenous blotches become more extensive, more numerous and remarkable, in those parts which were exposed to pressure before death. The soft parts are less coherent than in other dead bodies, and are almost friable; and the blood of the veins is aqueous, and without consistence. This putridity is remarked in a still higher degree in some particular organs, such as the intestines, which were principally affected during the disease.

Apoplexy, or apoplectic death, is the most frequent kind of death in contagious typhus, and perhaps, the only one, if we take into consideration, that every kind of death, is a general paralysis. In the ordinary sense of the word, however, we regard apoplexy as a sudden and frequently dangerous or fatal action exerted upon the brain or the nerves: this kind of death is very distinct from that which takes place in consequence of debility, and is even accompanied by some characteristic symptoms.

Besides these symptoms, there is a state of stupor, and a depression of the sensorium, which are the causes why the patient, at the hour of death, has not the use of his mental faculties; but dies in a state of vertigo and unconsciousness. To these may be added also, the extremely unpleasant symptoms of the nervous system, the convulsions which precede death,

cramps and paralyses, a more considerable turgescence in the face than in the other parts of the body, with slight alterations in the features.

When the apoplexy of typhus proves fatal, it may take place in two different ways, and in each by peculiar circumstances.

The humoral apoplexy of typhus, which gives rise to a compression of the brain and the origin of the nerves, by means of an extravasation of fluids, depends:

1. Upon an inflammation of the brain, or upon the membranes which envelope it—an accident which is not of rare occurrence in the inflammatory stage of typhus, especially if the patient be plethoric, and the physician has commenced too soon with a stimulating plan of treatment. This kind of death, therefore, generally takes place only during the first days of the disease, amidst the morbific phenomena, which indicate an early inflammatory state or irritation of the brain, and which are then perfectly similar to those which characterize a plethoric apoplexy, properly so called, with a bloated countenance, projecting eyes, a total extinction of the intellectual faculties, and a paralysis of the voluntary muscles, which is soon followed by that of the involuntary muscles. On post mortem examination, the vessels of the brain and of its coverings, are found in a state of engorgement, accompanied, in some instances, with extravasations.

2. Upon a simple uninflammatory congestion of the internal parts of the head—a congestion which may be either active or passive in the different stages of the disease, and to which, persons affected with typhus are extremely subject, so that they are, like a drunkard, exceedingly prone to apoplexy. The phenomena which are exhibited at the moment of death, as well as in the dead body, are almost the same as in the inflammation of the brain, to which we have just alluded: it must be remarked, notwithstanding what we have already said, that this kind of death may likewise take place during the latter days of typhus.

3. Upon the metastases of the brain.—In these cases, the symptoms of the affection of the head, which are at first

extremely mild, gradually become more severe and rapid, yet the apoplectic symptoms do not, as in the cases above mentioned, supervene until after the occurrence of a critical exacerbation. The patient generally dies after this unhappy crisis, usually on the fourteenth day of the disease. The persons most prone to this kind of death, are those who have weak heads, are intemperate and afflicted with grief, and those who are constantly engaged in mental exercise. The phenomena, in the dead body, consist in a slight engorgement of the brain, unaccompanied by any effusion.

4. Upon a suppuration of the brain.—Here the morbific symptoms and the phenomena which are present at the moment of death, can scarcely be distinguished from the preceding; and the only external sign, probably, by which this state can be recognized, is a slight turgescence of the head or of the face. On post mortem examination, however, we are always able to discover abscesses in the brain and its coverings, which have been the cause of the general paralysis. This kind of death is by no means of unusual occurrence. In the first examination of this kind that I ever made, I believed that I had been deceived with respect to the diagnosis and to have confounded a cerebral phthisis with typhus. I found this suppuration of the brain, however, afterwards in four patients that had died in consequence of typhus, and who had been previously in good health. The suppuration is formed during the disease, and probably by the constant inflammation of the brain during the first days of the attack. In perusing the works of a great number of authors, I found that Pringle and Haller had observed similar cases. Under these circumstances, the patients frequently die at an advanced stage of the disease, and not on any definite day.

The nervous apoplexy, which takes place without any compression on the part of the fluids, or the presence of any other body upon the origin of the nerves, but solely in consequence of a sudden relaxation of the nervous system, is the most frequent kind of death in typhus.

The phenomena which precede nervous apoplexy are the general symptoms of a nervous state; and every nervous dis-

case in general has a tendency to this termination, whether its symptoms depend upon the erethism, or the depression of the nervous system. This kind of death, in typhus, commonly takes place on the critical days of the disease. The principal cause of this circumstance is the exacerbation which usually supervenes on such days, and which completely exhausts the vital powers, which are so excited that the nervous system becomes suddenly relaxed. It is for this reason also that death happens only at an advanced period of typhus, and especially in the nervous stage. On post mortem examination, it is impossible to discover any traces of the causes of death. The softness of the brain, which some have asserted to exist, is extremely difficult to be distinguished. Besides, this kind of death is not very distinct from that by debility; nor is there any other difference, excepting that in the death from nervous apoplexy the sudden relaxation of the nervous system frequently comes on unexpectedly; while, in the death from debility, it comes on in a gradual and successive manner.

### *Of the Terminations in other Diseases.*

Typhus frequently terminates in other diseases, which may be either curable or incurable, and followed by mediate death. The causes of these terminations consist in a morbific disposition of the subject, or in a greater degree of intensity of the disease, or, in short, in the accidental circumstances which render the course of the disease anomalous in some one of its stages.

The most ordinary passages from typhus to other diseases take place nearly in the following manner:

1. By internal metastases which give rise to different affections, especially to engorgements and internal local inflammations, which terminate in a slow fever, never permitting a perfect convalescence, nor any increase of strength, and occasioning at length a more or less languishing state of the system. The different symptoms which supervene in this case, depend upon the differences between the organs which are the seat of

the morbific discharges. Thus, when these metastases take place in the head, the patient is affected with vertigo, cecity and imbecility; in the chest, with chronic coughs, asthma, a disposition to spit blood and to phthisis; in the abdomen, chiefly with obstructions of the liver and the spleen; from whence result different kinds of cachexies, dispositions to dropsy and jaundice, as well as to hypochondriacal affections, cramps, chronic affections of the stomach, of the intestines, lesions of the sexual functions, &c.

2. By external metastases, which give rise to critical swellings in some of the glands, especially in the parotid and in those of the axillæ, as well as in those of some of the other muscular and cutaneous parts, as in the extremities. These metastases produce still other local affections, such as cataracts, and a discharge of purulent matter from the ears, which is exceedingly common after typhus, and the origin of which may be referred to the noise and deafness which may frequently be observed in the ears at an early stage of the disease.

It ought to be remarked here, moreover, that the typhus is more subject than any other contagious fever, with the exception of the small-pox, to metastases, and that in this respect it is of a very insidious nature.

3. By the passage of local inflammations to internal suppurations, which gradually terminate fatally: these suppurations may be observed in the viscera of the abdomen, especially in the liver and the intestines, as well as in the brain and the lungs.

4. By external local gangrenes which readily assume the character of ulcers. These ulcers, which frequently take place in consequence of gangrenous vesicatories, and of the compressions of the soft parts, are extremely obstinate and difficult to cure. In a few instances I have also observed a gangrene of the nose, which some authors, and particularly, the Baron de Stork, have described as a consequence of typhus; but I have never seen it terminate fatally, whether there was a separation of the gangrenous parts, or a preservation of the mass or an ulceration of the part. I have also observed, especially in the epidemic at Cracow in 1806, a few cases of dry gangrene, which

occurred either on the hands or on the feet. In the first case the skin was detached under the form of a glove, and in the second, under that of a shoe or boot. I once knew a remarkable instance of this kind in a poor mendicant, who, after an attack of typhus, had himself carried about from one city to another, where he collected a considerable sum of money: the skin of his inferior extremities was completely detached under its original form, and the denuded bones were removed; in this condition he was finally apprehended by the police and sent to the hospital.—It ought to be remarked, however, that this gangrene is to be regarded as critical.

5. By a continual debility and exhaustion, which arise not only from a want of proper food, but also from a depression of the mind, from profuse hemorrhages, a precocious indulgence of the venereal appetite, and other debilitating causes. The convalescent is unable to recover his strength; his digestive functions are impaired; he sleeps little and without repose; his night sweats are profuse and debilitating, and in the midst of these he is perhaps harassed with a train of other distressing affections, such as diarrhœa, seminal emissions, consumption, &c.

Before we conclude this part of our subject, we ought to remark that persons in this case, although extremely enfeebled, rarely contract intermittent fevers, to which many debilitated persons are so particularly liable, especially when there prevails an epidemic of this kind.

## SECTION EIGHTH.

### OF THE PROGNOSIS OF TYPHUS.

The surest and most rational prognosis of typhus, as well as of every other disease, consists in predicting, either in a certain or probable manner, one of the three terminations of which we have already spoken. If we consider carefully the state of the patient, the intensity of the symptoms, and the course of the disease, as well as all the important circumstances which influence it; if we reflect carefully upon the signs which announce one or other of the terminations of the disease, and compare them with each other, then we may expect to predict with more or less certainty, in as much as it is possible to predict these terminations in fevers, according to the rules of the healing art, especially before the occurrence of a crisis.

Besides the rational signs which indicate the prognosis of typhus, there are others which are partly empirical, and which can neither be satisfactorily explained, nor even properly described. These, however, are sometimes more certain than the rational signs, and in this respect, even the prognosis of those who are strangers to the study of our art, should not be always despised.

To these empirical signs which induce us to expect a favourable termination, belong the following: a spontaneous vomiting during the first days of typhus, which generally promises a moderate course of the disease, especially when it is followed by a relief of the vertigo.

When, on the fifth or seventh day, there is a moderate degree of nasal hemorrhage, followed by a relief of the cephalic symptoms, we may expect a more easy nervous stage.

Lucid intervals in the morning, and a somewhat unimpaired memory, are always happy precursors. The first, especially, allow us to presume that the patient has slept well.

When the peripneumonic symptoms, during the first stages, are mild, we may infer that the progress of the disease will be proportionably slight.

When there is a spontaneous and moderate diarrhœa during the first days of the disease, it will be followed by the most salutary consequences, provided the symptoms which accompany it be moderate. Sir John Pringle assures us, that he has seen cases in which the contagious disease completely disappeared, in consequence of a diarrhœa. In the nervous stage, however, the diarrhœa is always dangerous, when it is not of a critical nature.

The difficulty of hearing, is generally regarded as a favourable sign, when it does not supervene at the commencement of the disease, or at the period of increase of the other symptoms. I have never been able, however, to draw any satisfactory conclusion from this sign, which appears to depend, in almost every case of typhus, upon the noise in the ears. I have remarked, in fact, in several cases of this disease, which proved fatal, that the difficulty of hearing was speedily dissipated; but it is not unfrequently the case also, that patients die while labouring under the most obstinate deafness. This circumstance, probably, depends upon the different kinds of death to which we have alluded in the preceding section. The difficulty of hearing, however, as well as all the other cephalic symptoms, have always a certain relation with the intestinal exercetions; and although Hippocrates says, (1) surditas alvum sistit, we may probably assert with as much reason, that the suppression of the alvine evacuations is often a cause of deafness in this disease. In this point of view, it is certainly a favourable symptom, since

(1) Prænot. coac.

the suppression of the alvine discharges, upon which the difficulty of hearing depends, is, unquestionably, one of the most desirable symptoms in the nervous stage of the disease.

The thirst, especially in the nervous stage, when it is moderate and supportable, may generally be considered as an extremely favourable sign. It is a symptom which should be present in every fever; and when the patient does not experience it, or when he is too weak, or prostrated, to demand it, we may always have good reason to suspect that there is a severe lesion of the nerves or of the sensorium commune.

A moist tongue, during the nervous stage, though of rare occurrence, is always salutary. The state of this organ comports, in some measure, with that of the skin. If the tongue is humid, the functions of the skin are less impaired; so that it may be regarded as one of the most salutary symptoms when the tongue, which was previously dry, becomes moist. This humidity always begins at the point of the tongue, and gradually extends to its base. It is also a consoling symptom when the tongue, which was before dry and parched, becomes in the least moist and supple.

The pulse, during the nervous stage, when it is open and not too frequent, may be classed amongst the favourable symptoms, provided, the whole weight of the disease does not rest upon the nervous system. Exacerbations in the pulse, however, are always absolutely necessary to the production of a salutary crisis.

The most certain prospect, however, of a favourable termination, rests unquestionably upon the moderation of the symptoms of the nervous state of the disease, and in general upon the integrity of the organs which are most essential to life. Here commences the rational prognosis, which is founded upon general physiological and pathological principles; but even these signs in fevers, especially in the typhus, are not sufficient to establish a sure prognosis, particularly when the crises, which frequently produce unexpected changes, have not yet taken place.

To these signs, which are in some degree empirical, and which

lead us to apprehend, with more or less probability, an unfavourable termination of the disease, belong the following: The want of relief after the first, and the subsequent spontaneous vomitings; extraordinary alterations in the features of the face from the commencement of the disease; the absolute absence of thirst; a continual and violent delirium; and a precocious appearance of the petechiæ, which are always unfavourable symptoms during the early stages of the disease.

The continuance of the peripneumonic or pleuritic symptoms into the nervous stage, a continual cough, and a reddish expectoration, are extremely unfavourable symptoms.

The swellings of the parotid glands, which come on at an early stage of the disease, and are purely symptomatic, are always, especially when they appear on both sides, dangerous precursors.

But the most dangerous symptoms in the nervous stage of this disease, and which generally lead to an unfavourable termination, are: blindness, and an involuntary discharge of tears; hiccough, paralysis of the tongue; a continual mussitation; a great and uncomfortable heaviness of the body; a continuance of the petechiæ; a small, oppressed, and frequent pulse; spasms of the bladder; pain on pressing the abdomen; inflammation of the intestines; tympanitis; continual movements of the hands, and gesticulations; paralysis or contraction of the muscles of the upper-lip, and consequently exposure of the teeth; a continual and debilitating diarrhœa; dysentery, &c. The total want of action of vesicatory applications, always indicates the greatest and most dangerous insensibility.

The aphthæ of the mouth very frequently indicate the presence of worms; and the continual hiccoughs, towards the termination of the disease, are the sure signs of a gangrenous state of the intestines, or at least of a considerable inflammation.

But of all the prognostic signs of this disease, those of the pulse and the urine are the most uncertain. Both may be natural, and yet the patient die—so true, in fact, is this observa-

tion, that Hippocrates and Sauvages, consider them as characteristics in this disease.

The gastric complications, when they are not dissipated at the commencement of typhus, greatly aggravate the disease. The same may be remarked with respect to syphilitic symptoms, though they may be purely local; while dropsies, on the contrary, are often dissipated during the disease, especially when they are not owing to an organic affection of the liver. They are very liable, however, to reappear after the disease.

Besides the observations which we have already made, it is necessary for the practitioner, in order to be able to point out, with certainty, the prognosis of this disease, to observe the following practical rules:

1. Any of the favourable or unfavourable signs which have been enumerated above, when taken separately, cannot be sufficient, either in this or in any other disease, to enable us to form any prognosis whatever.

2. Although in the first septenary, the symptoms of the disease are still slight, we cannot form any satisfactory conclusion, respecting the state of the nervous stage; nor can we, in fact, discover, much less determine or predict in any probable manner, even the causes of the increase of the intensity of this last stage.

3. The physician should be extremely circumspect in his prognosis, in people who are labouring under grief and misfortune, because in them the nervous system appears to be extremely relaxed. Persons of this description, not unfrequently succumb, even when the disease is slight, and not unlike a slow nervous fever. In this class may also be included the recruits who suffer from nostalgia, and are not yet accustomed to their new destination, and the persons who are subject to diarrhœa, or are afraid of the disease.

4. Women generally recover more easily from the disease than men; and in them, cæteris paribus, we may always form a pretty correct prognosis. Pregnancy, and its consequences, however, always aggravate the danger.

5. In typhus fever, though the symptoms of the disease may be extremely slight, we cannot draw any positive conclusions before the occurrence of a decisive crisis; for there is no disease so variable in its symptoms, so insidious, or so subject, during the crisis, to an obstinate increase, as the one now under consideration.

6. A convalescent from typhus should not be considered as perfectly cured, so long as there is any noise in the ears, or the slightest inconvenience in those organs: and so long as the symptoms are not completely dissipated, we may always apprehend metastases, even after a convalescence of several days.

## SECTION NINTH.

### OF THE TREATMENT OF REGULAR TYPHUS.

So long as we have no correct special nosology or satisfactory theory of a disease; so long as we are unacquainted with its causes, or at least the particular mode of its development; so long shall we be unable to penetrate the connexion and relation of its phenomena, considered as causes and effects; and as long as we cannot determine the different secondary effects arising from the primary morbific impressions, so long shall we be unable to point out the rational and proper treatment of that disease.

Such is the case with typhus; for all that we have heretofore said, plainly proves that our notions of this disease are of a hypothetical and empirical nature. In our treatment of this disease, therefore, we can only follow the path of hypothesis, of empiricism or analogy; in a word, our method of treatment must be indirect, and consequently, uncertain.

Every hypothetical plan of treatment is not only uncertain, and highly unsatisfactory to the scientific practitioner, but it may likewise be regarded as dangerous in its nature. Such a plan of treatment can be of but little value even in the eye of the theorist; and it cannot, in general, be satisfactory to those who have an exaggerated predilection for their own hypotheses, and who neither observe, nor appreciate the consequences which result from such a course of treatment.

The systematic writers, in the warmth of their disputes, have neglected the real and constant causes of diseases, and the most

unfounded theories have given rise to the most ridiculous systems. The truth of this assertion is amply confirmed by the history of typhus and of other fevers.

In the treatment of this disease, Galen and his disciples adopted a plan which was in perfect accordance with their doctrine, and which swayed the minds of practitioners until the beginning of the sixteenth century, when it was fortunately abandoned. Soon after this, however, there arose a set of men who laboured under the delusive idea, that the matter of every disease might be expelled from the body by means of sudorific medicines; and the alexipharmic remedies that were for a long time employed for this purpose, proved so extremely injurious, that Sydenham was compelled to decry against their use. The humoral pathologists, who regarded this disease as arising from a putrid alteration of the fluids, proposed an anti-septic plan of treatment. Many of these physicians commenced their attack upon the poison by purgative medicines, and proposed gastric evacuations as the preferable mode of treatment; while others advised the administration of emetics, with the view of expelling the miasm from the stomach, like an injurious and heterogeneous matter. The partisans of the doctrine of excitement, considered the secondary debility as the cause of the disease, and recommended a stimulating plan of treatment. The chemical physicians, on the contrary, regarded the absence of the acidifying principle as the cause of typhus, and proposed to cure the disease by an equivalent of oxigen.

No sect of physicians have presented their mode of treatment, with so much certainty and self-satisfaction, as the partisans of the doctrine of excitement: they pretend that the treatment of typhus, founded upon an increase of excitement, ought to be regarded as the only effectual plan. To extend their arrogance, they presumed to assert that the stimulating method of treatment, would not only cure this disease, but even immediately dissipate the contagious matter; that the powers of nature were incapable of conquering the disease, and that the health of the patient depended altogether upon stimulating remedies. We would be obliged to believe, if we could

place confidence in the histories of the disease, that have been founded upon a superficial diagnosis, that typhus fever could be dissipated in the short space of two days, notwithstanding that its determinate type is fourteen; and that no person affected with the disease could die, from the vain supposition that nature is always capable of effecting a cure. From these observations, we may readily see that this mode of treatment is identified with that of the alexipharmic medicines, the employment of which was so justly reprobated by the celebrated Sydenham.

If we bestow a careful and unprejudiced examination upon the different kinds of treatment to which we have alluded, it will be easy to perceive the shortness of their duration, their unimportance and insufficiency. But, notwithstanding this, we may justly expect that there will always be as many new methods of treatment, as there will be ardent and poetic imaginations in our art.

As regards ourself we shall follow the path of observation, of experience and analogy: and though it is the road to empiricism, it is nevertheless lighted by the torch of reason. By doing this, we shall soon discover, with a mind divested of every hypothesis, ideas which are not only new, but more conformable to truth.

The experience of all ages proves, that the typhus, like all other contagious fevers, is frequently cured of itself, that is, by the mere action of the vital powers, unassisted by any of the resources of our art. The simple state of the disease is, in fact, always dissipated in this manner; and it would be a lamentable circumstance, especially for the poor, if the truth of this assertion were not correct. The vital powers therefore, in the simple state of typhus, are not really enfeebled, otherwise nature would, in all probability, not be able to produce the necessary reaction.

Amongst the great number of cases which I have selected, either during the course of an epidemic typhus, or from the practice of others or my own, there is none more conclusive than that of the typhus, which I myself experienced in the year

1795. Whether it was owing to delirium, to obstinacy, or to want of confidence in the resources of our art, I took nothing during the whole course of my disease, (except an emetic at the commencement, which I myself administered after a considerable blood-letting,) but lemonade and barley-water; and my servant was simple and obedient enough to throw away all the medicines that were brought from the apothecary; so that no physician would have any thing to do with me. Nevertheless, I happily surmounted the disease, and after a favourable crisis, which supervened on the fourteenth day, I became perfectly well.

I have repeatedly seen patients who were affected with a simple ordinary typhus, get perfectly well by taking nothing but lemonade. For this mode of treatment I am indebted to the views of a great physician, the Baron de Stork, (1) who has treated the same disease successfully, by the simple employment of wine whey.

Although the vital powers are sometimes greatly depressed, by the violent symptoms and complications of the disease, they are nevertheless often capable of conquering the most powerful enemies; and I have seen a great number of cases where the patients have recovered their health, without any remedial aid, notwithstanding they had suffered from ingesta, from violent grief, from copious bleedings, and from spontaneous and debilitating evacuations. The wise and beneficent care of Nature frequently repairs both the faults of a bad regimen and those of the ignorant physician, as well as the injurious effects of the improper remedies which are generally employed in fevers, and particularly in the contagious exanthematous.

It is to the neglect of this fact that are owing the many systems and improper methods of treatment, that have always swayed the minds of physicians, who in the conceit of their own power, have forgotten that the salutary crises of nature, often surmount or repair the bad effects of an improper plan of treatment. The physicians who attribute the cure of such a disease

(1) Annus medicus, 1, p. 16.

to the remedies which are seldom, if ever tasted by the patient, appear to me to be really worthy of pity; for all the good that can be produced in the critical fevers, can only take place in a very indirect manner.

Besides this incontestable fact, that the vital powers, in a moderate and simple typhus, are always of themselves sufficient to produce the most perfect cure, it ought to be observed that this cure can only be effected in a determinate time, and only by virtue of certain changes which supervene in the animal economy; and that we have not been able hitherto to discover any plan of treatment that is at all capable of abridging the type of this disease. In typhus, therefore, as in the small-pox, and the other contagious exanthematous diseases, the perfect cure of the disease cannot consist in the abridgement of its type, because this abridgement can only take place in consequence of death.

Since then it is a fact that Nature, when uninterrupted in her operations, is alone capable of curing the contagious typhus; that this disease has a determinate progress, and that its course, when unimpeded, cannot be at all abridged; that no theory of our art has yet furnished us with any certain method of treatment; and that the various hypotheses that have hitherto been advanced, have been productive of no advantage, it remains for the practitioner, in the treatment of this disease, only to watch the means which are employed by Nature in the accomplishment of her cure. If this cannot be effected, the physician should assist her operations and remove every obstacle, in such a manner that the vital powers may be able to produce freely, and without impediment, their salutary action, until the disease shall be completely conquered, and its matter expelled from the system.

This constitutes what we have called the indirect method—a method which does not presume to penetrate the hidden and inexplicable causes of this disease; but which is intended merely to direct the vital powers, and to enable them to triumph over the disease.

This indirect method in typhus consists in giving the vital

powers a sufficient state of freedom and activity, to enable them to remove every obstacle, to prevent the complications of the disease, to allay all the dangerous symptoms, and to contribute as much as possible to a salutary crisis; in a word, to enable them to reduce this fever, as much as possible, to a simple and moderate state, in order that the vital action may be capable of effecting a cure.

As in every distinct stage of typhus, there is always a predominant character, the practitioner ought never neglect to observe its peculiar nature, in order that he may be able to use such means as may have a tendency to overcome it.

In the treatment of this disease, the practitioner ought, moreover, to peruse the successful observations that have been recorded, either in his own practice, or in that of others, and diligently compare them with each other, without, however, condescending to a blind empiricism, in order to adapt them in a rational manner, and with the prudence of a scientific physician, to every suitable case, taking always care, however, to modify them according to existing circumstances.

### *Of the Treatment during the Stage of Infection.*

In the early part of this stage, the disease is always so slight, that neither the patient nor the physician, can recognize it, nor distinguish it from the state of health.

### *Of the Treatment during the Forming Stage.*

In this stage, which may already be recognized by some slight changes which are experienced in the system, it is always difficult to adopt a proper method of treatment, because the precursors of the disease are not sufficiently distinct from those of other fevers. From repeated observations, however, I am inclined to believe, that we may derive much benefit in this stage, from the plan of treatment which we shall direct in a subsequent part of this work, especially before the chills which usher in the fever have properly commenced.

As regards the salutary effects of emetics and of blisters, which Cullen, and others, are said to have so frequently employed with success, in arresting the development of incipient nervous fevers, I have not had sufficient experience to enable me to say any thing concerning their virtues, because the physician is seldom called in during this stage of the disease.

*Of the Treatment during the Stage of Invasion.*

The chills which characterize this stage of the disease, indicate the invasion of the general contagion, which can only be terminated afterwards by a crisis. It is in this stage, that the physician must begin his indirect treatment, because neither theory nor empiricism, have yet been able to devise any means capable of checking the contagion, when arrived at this height, or of abridging the course of the disease.

It is then, one of the most important practical rules in every critical, as well as in typhus fever, never to lay any stress upon vain hypotheses, nor to employ any powerful remedies during the stage of invasion, and especially during the chills; for these are frequently necessary to the sanative operations of nature; nor should we be deceived by any of the violent symptoms of this stage, which are always dissipated in a few hours, by the efforts of nature; because, by an improper interference, we might so injure or impair the vital powers, as to give rise to the most dangerous, and even fatal consequences.

Thus, the employment of blood-letting for oppression at the chest, of an emetic for spontaneous vomiting, of a blister for vertigo or cephalalgia, and of other means, whether of a debilitating or stimulating nature, would not only be improper in this stage of the disease, but might even prove highly prejudicial. By these means, the fever may be either weakened, or increased, and the vital functions, in either case, might lose their necessary harmony.

The most proper treatment in this stage, therefore, consists in the employment of such means as are calculated to relieve the universal spasm, and the contraction of the capillary ves-

sels, which, being obstructed by the fluids of the larger vessels, occasion the compression of the nerves, and impede the action of the vital powers.

Tepid drinks, and infusions of orange, alder, or camomile flowers, given with a view to promote gentle perspiration, are, with a moderate heat of the bed, the best remedies that can be employed under these circumstances, even when there are spontaneous vomitings, which may be greatly favoured by these means.

The future state of the patient, and the favourable course of the disease greatly depend upon the mild and moderate means that are employed at the commencement of the fever; for, upon them is founded the hope of a salutary crisis, which, though it may depend upon a number of other circumstances, is not less mediately connected with the first attack of the disease, and the treatment that is employed. If the treatment has been improperly directed at the beginning of the disease, it will be extremely difficult, though the chances may, in other respects, have been favourable, to save the patient.

### *Of the Treatment during the Inflammatory Catarrhal, or Exanthematous Stage.*

The inflammatory catarrhal character always precedes the exanthematous character in the contagious fevers; and it is upon the proper treatment of this state, that depends the moderation of the fever during the subsequent stages, and in a mediate manner, even the crisis itself, especially that which supervenes after the first septenary. It is in this stage, in fact, that we may neglect the most favourable opportunity, or commit the greatest evil.

The indirect method here consists, either in directing the vital powers which, in this stage are never weakened, but merely depressed or somewhat exalted; or in dissipating or diminishing the symptoms of the disease, or, in a word, to employ a rational or empiric plan of treatment with the view of subduing its pre-

dominant character, and thus to dispose both the fever and the body to a salutary crisis.

To effect this purpose, the best means that can be employed, in the moderate and ordinary course of typhus, are slight resolutive medicines, given in such a manner as to disperse the inflammatory symptoms which characterize this stage of the disease, and to restore the suppressed functions of the skin. Experience shows that emetics are the most proper remedies in this case.

### *Of Emetics.*

Spontaneous vomitings, a furred tongue, bitter taste in the mouth, pain in the head, and oppression at the stomach, the phenomena which denote gastric disorders, and which are never the causes but simply the effects of the disease; and the opinion also, that the contagious matter is introduced into the stomach through the œsophagus, have induced physicians, in almost every age, to make use of emetics in this disease, the good effects of which have been amply confirmed by the numerous observations of modern physicians.

It is highly probable that the salutary effects which result from the employment of emetics, are owing to the violent shock that is imparted to the system, to a relief of the spasm, to the restoration of the cutaneous exhalation, and especially to the secretions of the mucous membranes, to the sympathetic effect of the stomach upon the brain, as well as to many other changes which these medicines may be capable of producing, and which have not been hitherto explained. These effects are always very astonishing and interesting to the practitioner, though their fundamental cause is still unknown.

It is by these salutary effects that the typhus is distinguished from the other contagious exanthematous fevers, in which the effects of emetics are merely fallacious, or at all events, but slight and transient. There are in fact, but few kinds of fevers where the treatment by emetics affords so much utility as in typhus; and even some of those which are termed bilious, and in

which emetics are of so much benefit, may probably be referred to this disease. Be this, however, as it may, it is evident that the affection of the liver and the derangement of the biliary secretions, which are remarked in this disease, are sufficient circumstances, not only to explain the efficacy of emetics, but likewise to justify their employment.

The use of emetics, therefore, as a means of treatment in the commencement of typhus, may be regarded as a kind of rational empiricism; and, although both experience and observation have proved that they may be beneficially employed in the treatment of this disease, yet their use is purely empirical, and founded upon analogy. It may safely be asserted, however, that an emetic given at the commencement of the disease, will not only render its subsequent course more mild, but that it will likewise prevent anomalies, and dispose the body to the most favourable crisis. And it is in cases of this nature that the patient is frequently able to sit up during the latter part of the disease, which appears sometimes, from the slightness of its symptoms, to be dissipated on the eleventh day.

As severe vomiting generally affords the greatest relief, I always prefer the Ipecacuanha, given in large doses, either alone or in combination with a grain of the tartrate of antimony and potash. The practitioner, however, should always have discrimination enough to make such modifications as the circumstances of the case may require: in some instances, emetics may be altogether improper, while in others, their use must be preceded by preliminary measures, and in others again it may not only be proper, but absolutely necessary to repeat them.

With respect to the time, it may be remarked, that the first, second, and third days after the chills, are the most favourable for the administration of emetics in this disease. I have seen cases, however, where these remedies were productive of the most happy effects, when given at a later period; and in general, when there is no inflammation or real vital debility, a spontaneous or artificial vomiting at any time during this stage of the disease, frequently produces a diminution of the stupor, a greater serenity of mind, a dissipation of the delirium, a more

tranquil sleep, a more gentle perspiration, a slight remission of the febrile heat, of the thirst and anxiety, and the countenance begins to assume a more favourable aspect.

The remarks which we have just made, with respect to the proper time for the administration of emetics in this disease, though confirmed by the united observations of the physicians, both of ancient and modern times, are principally based upon the authority of Pringle and Stoll, two of the greatest and most experienced physicians that adorned the records of medicine during the last century. That the mildness and short duration of typhus, are frequently owing to the good effects of emetics, has, moreover, been lately proved by an experienced physician, in a small work, (1) full of ingenious and excellent observations upon this disease.

In the observations which we have hitherto made, concerning the employment of emetics during the inflammatory stage of this disease, the reader will probably perceive some slight contradiction, to correct which I shall remark:

1. That emetics administered soon after the invasion of the disease, and before there is any decided inflammatory character, certainly produce the most salutary effects, in as much as they do not augment the subsequent inflammatory state.

2. That this inflammatory state at the commencement of typhus, is not purely inflammatory and phlegmonous, but solely a fallacious inflammation; and that it may justly be regarded as catarrhal. In this case, emetics, when administered under certain conditions, may undoubtedly prove salutary, especially by making a favourable impression upon the deranged functions of the cutaneous organ.

3. That where there is a highly inflammatory state, and a considerable affection of the lungs, we may always precede the administration of emetics by blood-letting, as I did in my own case, on account of the oppression at the chest. On the second day I took an emetic, applied a blister between my shoul-

(1) Darstellungsversuch des im Jahren 1805 Ausgebrochenen Epidemie, aus dem Journale des D. I. Pichler, Brüm, 1807.

ders, and abandoned myself to my fate, like a vessel on a stormy ocean, without sail or rudder. My confidence in medicine was completely lost, in as much as I believed, that in typhus, every thing depended upon the proper management at the commencement of the disease.

4. That in a violent inflammatory state, emetics are not really indicated, and that we ought, on the contrary, cautiously to abstain from their use.

### *Of Mild Resolutive Means.*

It is not only necessary to give the patient tepid drinks during the vomiting, in order to excite sufficient evacuations, and to establish by this means, a gentle perspiration, but it is likewise of the utmost importance, after the desired effect of the emetic has been produced, to take the greatest care to keep up the perspiration during the subsequent stages of the disease. For this purpose, we should always have recourse to experience, and even to the considerations of a rational plan of treatment.

I have proved to a demonstration, as well by the number of the most remarkable symptoms of the disease, as by the anology deduced from other contagious fevers, that the predominant character in this stage of typhus, is nothing but the inflammatory catarrhal and exanthematous state. This being the fact, it is evident that our whole medical treatment should, in most cases, consist merely in combatting this state of the disease. And I believe also, that it is highly important to pay particular attention to the exanthematous irruption, and to favour its development: for it is impossible to say whether it is purely accidental, and whether it will always be attended by a certain remission in the regular course of the disease.

In this stage, it will be necessary also to employ different kinds of drinks, which must either be of a mucilaginous, a slightly resolutive, or acid nature, according to the circumstances and different modifications of the principal character of the disease; and according to the effects which they produce upon the lungs, and upon the general surface of the body. In this

respect, therefore, it is obvious that warm drinks are more proper than cold; nevertheless the choice should always be left to the inclination of the patient, who will easily direct the physician.

The neutral salts may also be given with much advantage in this stage of the disease. They excite the mucous organs, and by rendering their secretions more fluid, they gently unload the primæ viæ. They should generally be given in moderate doses, and in such a manner that they may not augment the cough and the oppression at the chest.

During the early days of a mild and simple typhus, and frequently during the whole septenary stage, I have always found the greatest benefit from the employment of a decoction of marshmallows, with a small quantity of the sulphate of magnesia and of tamarinds, or of the syrup of alder-berries, and for drink, a decoction of barley-water with oxymel, or a little warm lemonade, or a weak tea with a little vinegar or lemon-juice.

This mild and, as it were, passive method of treatment at the commencement of the disease, is generally productive of the most salutary effects: it is particularly adapted to the predominant catarrhal state; for experience has proved that a violent plan of treatment in this case, is always productive of mischief.

I have already said that the fate of the patient in typhus, depends, in great measure, upon the treatment that is employed at the commencement of the disease. The mild and resolutive means of which we have spoken, including those which are calculated to favour the cutaneous perspiration, constitute undoubtedly the most proper plan of treatment in this stage of the disease. They have not only the property of preserving the vital powers in a moderate state, of reestablishing the functions of the skin, and of facilitating the exanthematous irruption, but they likewise gently open the excretory passages, and dispose the body to a favourable crisis.

He who neglects these means and employs too active a method of treatment, will do as much injury to the progress and the salutary crises of this disease, as he will render himself ridiculous, to pretend, by this means, to abridge its course.

### *Of the Remedies which may prove injurious in this Stage of the Disease.*

The physician may here, as in every other case, do harm in two different ways, either by employing too debilitating means, or by too active stimulants. To the first may be referred the use of blood-letting and of purgatives, and to the second, the employment of tonics and of diffusible stimulants.

### *Of Blood-letting.*

Much has been said concerning the utility and the disadvantages of blood-letting in this disease; and as it too frequently happens in our art, the results have been either beneficial, or injurious. To accomplish their end, physicians have employed the most absurd and ridiculous theories and hypotheses, and even the most contradictory practical observations.

It is thus that some have proposed the use of bleeding in the asthenic fevers, from the ridiculous supposition, that it would afford more space in the vessels for mixing the blood; that some have rejected its use, from the idea that it would favour the absorption of the impurities of the primæ viæ, that it would cause general debility, &c. In their blood-letting, the symptomatic physicians were always guided by the pulse; the empirics, by observation and analogy. It is for this reason, therefore, that this important and useful, or injurious remedy, has never been considered in its proper light—which we shall now proceed to do.

In the greatest number of cases, blood-letting may be regarded as an injurious remedy, not only in the nervous, but likewise in the inflammatory stage of typhus, especially when the inflammatory symptoms are slight, and the patient is of a feeble and cachectic dispositon. By this means, the patient becomes more enfeebled, the salutary operations of nature are disturbed or interrupted, and the nervous character, under which the vital powers already begin to sink, becomes subsequently greater

and of a more distressing nature. And though death does not always result, yet the progress and the crises of the disease are retarded, and the convalescence singularly protracted.

In other cases again, where the disease is mild and regular in its course, and the subject strong and plethoric, blood-letting constitutes but an indifferent remedy, and is, consequently, superfluous. It is indifferent, because it is not really so dangerous as some have supposed; so that in this disease a patient may without danger lose several ounces of blood, in such a manner that the subsequent nervous stage shall not be at all influenced. By an erroneous observation, however, of the symptoms of the disease, and a want of proper attention to the effects of other useful remedies, and even of the salutary powers of nature, indifferent blood-lettings have sometimes been considered as the causes of the melioration of the symptoms of the disease; a circumstance which has greatly contributed to the exaggerated praise of their use in typhus.

Notwithstanding what we have already said upon this subject, it must be remarked that in some cases of typhus, and especially in the inflammatory stage, blood-letting is both a necessary and a beneficial remedy; not, in fact, in the mild and simple course of the disease, but in cases where the inflammatory character is augmented, and where there exists some local and dangerous affection. If, therefore, we neglect this remedy, the local inflammations will acquire more intensity, the vital powers, which have been for a long time depressed, will be exhausted, and the nervous stage will be full of danger.

From all these considerations, we see that blood-letting may be very differently estimated, according to the morbific symptoms of the disease; it may sometimes be injurious or indifferent, and at others highly useful and even absolutely necessary: consequently, the different disputes that have been raised upon this point, even from the most opposite observations, may be very readily terminated: for every medicine is extremely relative, especially in a therapeutic point of view, and when we speak of its effects which are not dependant upon any absolute properties.

## *Of Purgatives.*

In typhus, and especially during the inflammatory stage of the disease, it is always highly important that the primæ viæ, as well as every other excretory passage, should be free and unobstructed. In this disease, however, there is no rational indication for the use of purgatives; on the contrary, experience confirms that they are more injurious than useful.

Besides the inconveniences which purgatives produce, and which are similar to those which result from blood-letting and the loss of fluids, they have the property not only of diminishing the cutaneous perspiration, which is so necessary to be taken into consideration, and, consequently, of proving injurious in this stage in the same manner, as in every catarrhal fever; but they likewise produce a relaxation of the intestinal canal, which becomes afterwards extremely dangerous, by keeping up a continual and debilitating diarrhœa, which it is often exceedingly difficult, and sometimes even impossible to check.

I believe, however, that a slight diarrhœa in this disease, especially during the inflammatory stage, is by no means so dangerous as has been supposed by some physicians. I believe, in fact, that in strong and vigorous men mild purgatives may, in some measure, be an indifferent and innocent, and consequently, a superfluous remedy; and that the favourable terminations of the disease, have very frequently been unjustly attributed to these remedies, while, in fact, they were owing to other means. This has been particularly the case when the typhus was mistaken for, and treated as, a bilious fever.

It is to this circumstance also, that must be attributed the high and exaggerated encomiums that have been lavished upon the virtues of purgatives, in this disease, by Dr. Hamilton, and other physicians.

There may be cases, however, where moderate purgatives, when not too often repeated, may be productive of real benefit, especially, when they act by freeing the body from its hurt-

ful impurities: nevertheless, they ought not to be recommended as an ordinary remedy in this disease.

### *Of Tonics and Stimulants.*

In the inflammatory stage of typhus, tonic and stimulating remedies are almost always injurious, especially, when they are of a violent character. Both reason and experience reject their use; and they should, therefore, never be employed, except in those cases where there are traces of real vital debility.

The excess of the vital powers, which is often present, during this stage of the disease, can never be moderated by these kinds of remedies; and as the vital powers are already in a state of depression, they are not only unable to acquire any expansibility, but there likewise arise new obstacles from the orgasm of the fluids which are developed. It is confirmed by experience, moreover, that as long as there is no urgent debility in this stage, every stimulating remedy will produce an artificial anomaly, and that the improper employment of diffusible stimulants during the early part of the disease, will inevitably lead to injurious consequences.

In general, the stimulating plan of treatment in this stage of the disease, is still more injurious than the debilitating; it produces what the partisans of the doctrine of excitability have justly called the paralysis by exhaustion of the vital powers, or indirect debility. This state is more difficult to be removed than the simple direct debility, because it produces in the patient a kind of insensibility and depression, which render him incapable of being roused, even by the most powerful stimulants.

Besides these injurious effects, to which we have just alluded, there is no plan of treatment which so much deranges the salutary crises, as that which obstinately blocks up every avenue of the body, and which acts so briskly, as we have already said, upon the state of the vital powers.

Notwithstanding this, there are physicians, who are in the habit of prescribing stimulating medicines through the whole course of typhus, with which they pretend always to cure the disease, or to abridge its duration. Osthoff and Hartmann, have made some extremely ingenious and appropriate remarks upon this abuse; and what practitioner is there that is not acquainted with the fact, that the greatest mortality is occasioned by the stimulating method? How many young and vigorous men have fallen victims to this plan of treatment in typhus fever!

There may be cases, however, where these medicines may be indicated in this stage of the disease, especially in the anomalous symptoms, when the vital powers are depressed, or where there is a real state of malignity. In the mild and ordinary course of typhus, however, the necessity of this method is never indicated.

*Of the Treatment during the Nervous Stage of the Disease.*

The denomination of this stage, from the predominant character of the disease, is indicative of the proper plan of treatment. As it is the period in which the vital powers become languid, exhausted, and menaced with real danger; and as the nervous system becomes more particularly affected, and is attended with a derangement of the functions of the skin, a stimulating method of treatment becomes absolutely necessary. This method consists in sustaining, and in rallying the vital powers, and in paying particular attention to the approaching crises. It is founded upon the rational indications which are presented in this stage of the disease, and its utility is amply confirmed by experience and multiplied observations.

In all cases of fevers, however, where there is real vital debility, connected with a nervous state, the physician should pay particular attention to the preceding character of the disease, and to make use of such a course of treatment as will be adapted to the circumstances of each particular case. During

the existence of the exanthematous irruption, the stimulating remedies should be of the mildest kind, and be administered with the greatest caution.

The principal means which are capable of fulfilling these views—of destroying, as it were, in its germ, the debility brought on by the preceding inflammatory character, and of answering all the indications both of a general and a symptomatic nature, are, as is amply confirmed by experience, blisters, camphor, and arnica.

Emetics, however, should by no means be neglected in this stage of the disease; they remove the debility which is occasioned by the ingesta of the stomach, and impart a salutary shock to the system. They produce the most favourable impression upon the skin and the nervous system; and independently of their anti-bilious properties, they have been recommended by Cullen and Stoll, as particularly useful in the nervous state of fevers.

In the commencement of this stage of typhus, therefore, an emetic may be administered with the greatest advantage, especially if it was neglected at the beginning of the fever, or was not given on account of the intensity of the inflammatory state. And in case it even was administered at the commencement of the disease, there may be instances where it may sometimes be successfully repeated. In this respect, however, it is impossible to lay down any precise rules; so that the employment of these remedies must be left entirely to the prudence and the judgement of the physician

### *Of Blisters.*

There are no curative remedies, that are so well adapted to the state of the fever, and the symptoms of the nervous stage as the employment of blisters. The indications which are to be fulfilled, consist in raising the vital powers, which are threatened with depression; in making a revulsive impression upon the sensorium, and a strong impression upon the nerves, in reestablishing the perspiration, and in moderating the copious

alvine evacuations. What means can be more proper to effect this object than blisters? There is no remedy in the whole Catalogue of the Materia Medica, that unites these properties in so eminent a degree, as the medicine of which we are speaking. The effects of blisters are seldom fallacious, unless the physician has not chosen the proper time for their application, which is on the seventh or eighth day of the disease, that is, at the moment of the invasion of the nervous character: it is always better, however, to employ them too soon than too late.

Blisters should never be employed as mere rubefacients, but they should always be kept on until they have produced a decided impression upon the skin.

I confess, however, that there may be cases, in which the employment of blisters may not only be superfluous but even injurious. This is especially the case in the putrid fevers, in which the ulcers have the greatest tendency to degenerate into a gangrenous state. In the ordinary typhus, however, where the symptoms of this stage are moderate, blisters are not only harmless as vesicants, but altogether insufficient as rubefacients.

I believe, therefore, that blisters can produce no beneficial effect, when employed merely so as to vesicate the skin, and to produce a slight discharge of serum, for it will readily be perceived that so trifling a loss of fluids cannot in any degree weaken the disease; on the contrary, I sincerely believe, that the greatest advantages of blisters, are to be derived when their application is continued so as to produce ulcers.

This suppuration produces an extremely salutary effect in the functions of the skin. In the typhus of horned-cattle, it acts with more utility than any other remedy that can be employed, and preserves those, which are not affected, from the contagion. In a word, it is this suppuration, which exerts such a happy influence over the morbific state of the skin during an attack of typhus, that preserves the human subject from the effects of the contagion, as is amply confirmed by the observations which have been made upon persons that have been blistered.

It is not easy, however, in this disease, to keep up a moderate suppuration by means of blisters, because when dressed in the

usual way they heal extremely quick, and because the skin generally is dry and insensible. If they are too violently irritated, they are apt to degenerate into obstinate and painful ulcers, which generally aggravate some of the symptoms of the disease, or render the convalescence more difficult and protracted. This is especially apt to take place when the recent wound of a blister is irritated with the powder of cantharides. To avoid this, and at the same time to keep up a moderate and continual suppuration, it will be adviseable to preserve the epidermis, and to make use, during the first day, of the simple cerate; and afterwards, when the nerves have become accustomed to this excitement, to apply the compound plaster of diachylon, (*a*) which will neither occasion a painful suppuration, nor too speedy a healing of the wound.

The most proper and convenient places for the application of blisters in this disease, are, unquestionably, the calves of the legs, and the nape of the neck. There may be cases, however, where it may be necessary to apply them to the arm, or to any other part of the body, according to the revulsions that are intended to be produced. Notwithstanding this, they should never be applied to the thighs, because there they generally produce the most severe pain, and even obstinate ulcers. Campbell proposes that they should be applied upon the head, after the scalp has been well shaved. (*b*) But for my own part, I have found this method barbarous and frequently injurious. The revulsions of the head are usually produced in the most salutary manner, by the irritation of the remote parts; and when there is no peculiar anomaly, the application of a blister to each calf, is amply sufficient to produce every desirable effect, in the treatment during the nervous stage of this disease.

(*a*) For this purpose, we may also use, with much advantage, the common savine ointment, either as it is prepared in the shops, or made weaker by the addition of a greater proportion of lard.—S. D. G.

(*b*) This ridiculous practice of shaving the head, and of applying blisters to it, in cases of fevers, ought, we conceive, to be deprecated by every well informed practitioner. It not only greatly disfigures the patient, but what is still worse, it generally produces an effect directly opposite to that which the blister is intended to exert.—S. D. G.

## *Of Camphor.*

After the application of blisters, and even during their action, there is no better remedy for the typhus in this stage, than camphor. Its powerful action upon the debilitated state of the vital powers and upon the nervous system in general, especially upon the sensorium and the functions of the skin, is fully confirmed both by theory and practice. It is one of the few remedies which are capable of dissipating the remaining symptoms of the inflammatory stage, and which act so advantageously in moderating the injurious effects of cantharides upon the urinary passages. It is also one of the most diffusible stimulants; it penetrates even into the organic pores, and communicates, like the electric fluid, its stimulating effects to every organ.

The efficacy of camphor in this disease, has also been highly extolled by the imposing authorities of Cera, (1) and Callisen. (2)

The doses of this medicine should be well regulated, and never be too small nor too large; because the former are insufficient, and the latter may frequently produce harm, on account of the dryness of the throat, and the irritability of the stomach and the intestines, which may be augmented by this means, and present an obstacle to the mucous secretion, which is so necessary to lubricate them.

In the ordinary and moderate course of the disease, ten or twelve grains a day are generally sufficient. A grain may be given every two hours; yet it is sometimes necessary to employ larger doses, especially when the nervous system is extremely depressed, and the vital powers exhausted. Some physicians, however, give several drachms of camphor a day, and sometimes even ten grains at a dose.—Such a plan of treatment is literally burning the patient to death. What effects is this remedy likely to produce, when combined with other violent stimulants?

(1) Vom Lazareth fiebre.

(2) Acta Societ. Hayn, vol. 1.

When the curative indications demand the employment of a larger dose of camphor than we have indicated, although the œsophagus and the rest of the alimentary canal may still be preserved without danger and inconvenience, it will be more proper to distribute this dose by other passages, and to administer it, for example, in the form of an enema, and by frictions upon the surface of the skin.

## *Of Arnica.* (*a*)

The flowers of this plant, as is well known to physicians, have the property of exciting and of producing a shock in the animal economy, and, when given in large doses, of occasioning vomiting. The nausea which they create in this stage of the disease, is so beneficial, that it cannot be equalled by any other medicine. They have the property also of acting upon the brain, not only by imparting a shock to its most delicate fibres, but likewise by preventing the stagnation of the fluids, and of dissipating, or at least greatly diminishing, by this means, some of the cephalic symptoms arising from the general debility of the system.

They often allay the delirium and vertiginous stupor, and act likewise beneficially in reestablishing the functions of the skin, and much more so in proportion as the inflammatory symptoms are dissipated.

The ordinary dose of this remedy, is from two to four drachms a day, according to the irritability or stupor of the patient. It is best given in the form of an infusion or a mild decoction.

I have seldom seen this remedy produce vomiting, though it frequently creates nausea, in consequence of its unpleasant taste. It does not, like the other emetics, increase the alvine evacuations, but, on the contrary, it rather moderates the spontaneous discharges.

(*a*) For an excellent description of this plant, the reader is referred to the American Dispensatory, by Professor Coxe, of the University of Pennsylvania.—S. D. G.

This remedy has received the highest encomiums from the empiries, for its beneficial effects in this disease.—It often greatly diminishes the nervous character, and sometimes even completely removes it. This is a fact amply confirmed by my own experience, as well as by that of Collin, (1) of Stoll and of Althof. (2)

### *Of Diffusible Stimulants.*

The substances which are endowed with a diffusible stimulating property, which act promptly and powerfully upon the nervous system, and which, on account of their temporary action, must be frequently repeated, in order to keep up their effects, are of the greatest benefit in the nervous stage of typhus fever. If they are aided by the simultaneous application of blisters, and the use of camphor and arnica, they will be amply sufficient to answer every indication, whether of a general or of a particular nature, by their salutary impression upon the skin and the intestinal canal.

The best diffusible stimulants in this stage of the disease, are the roots of the angelica, of imperatoria, (*a*) valeriana, levisticum, (*b*) calamus aromaticus, and even the flowers and the leaves of the common camomile. These remedies should always be administered in the form of a concentrated infusion.

I would not here by any means wish to be understood, as

(1) Annus Med. Contin.
(3) Observ. de Feb. Petech. Got. 1787.

(*a*) The imperitoria is a perennial plant, and a native of the mountainous parts of Austria and Switzerland. It increases the urinary secretions, and acts as a powerful stimulant upon the nervous system. In Germany, it has been much celebrated for its virtues in the different kinds of fevers, in pneumonia, asthma, in retention of urine, and various other affections. Burdach's System der Arzneymittellehre, Dritter Band, S. 151. Zweite Ausgabe, 1819.—S. D. G.

(*b*) This plant is a native of the Alps, but is at present extensively cultivated in the gardens of Germany. It is perennial, and is chiefly employed in cases of Amenorrhœa, hysteria, asthma and dropsy. The dose of the root, is from half an ounce to an ounce, given in the form of an infusion, at different intervals during the day. Burdach, op. cit. p. 404.—S. D. G.

disputing the good effects that may be derived from the employment of the contrayerva and the serpentaria virgineana; but I believe that we might easily substitute for these exotic and expensive remedies, indigenous substances capable of producing the same, and even better effects. This seems to be the case with our angelica, when it is collected at a proper season of the year; it is more volatile, pungent and penetrating than the substances to which we have just alluded, and is, on this account, extremely well adapted for the nervous stage of this disease. I have treated numerous cases of typhus fever, during this stage, with this root alone, and always with the greatest success.

Having attended a prodigious number of cases of the epidemic typhus, which prevailed in Galicia in 1806, and lately again in the French Military Hospitals at Vienna, where all the details of a medical treatment could not be very strictly observed, I adopted a plan of treatment which I invariably pursued, as long as there were no anomalous symptoms, with the happiest effect.—I shall here present an abridgement of this plan.

During the first days of the disease, I always administered an emetic, followed by a mild resolutive and slightly sudorific decoction of the roots of the triticum repens, (*a*) and of the flowers of alder, with a small quantity of the sulphate of potash. About the seventh day, at the commencement of the nervous stage, that is, when the typhomania and debility augmented, and when the dryness of the tongue and the skin became more considerable, and the abdomen began to swell, I resorted to the application of a blister to each calf of the leg, sprinkled over with a little powdered camphor, and ordered the patient to take daily, about eight ounces of an infusion of the flowers and root of the angelica, in the proportion of two drachms of each, with a little laudanum, two table spoonsful of which were taken alternately every two hours, with a little powdered camphor. By this simple method, I brought almost every case of the ordi-

(*a*) See Burdach, op. cit. IV. B. S. 114.—S. D. G.

nary and regular typhus to a salutary crisis, and happily surmounted even some of the anomalies, whether they were occasioned by negligence or by a bad and ill directed method of treatment.

I do not, however, regard the other diffusible stimulants as less energetic than those which I propose; but they are more expensive, and cannot, consequently, be so readily employed in hospitals and amongst the poor.

When treating of the regimen of this disease, we shall have an opportunity of pointing out the beneficial effects of wine in this stage of typhus. Every remedy that has any analogy to the properties of wine, deserves the same recommendation, especially the different kinds of ether, the diffusibility of which is still greater than that of camphor.

It yet remains for us to point out, in a general manner, the doses of the diffusible stimulants, as applicable to the nervous stage. The physicians of the last century, have undoubtedly distinguished, with a great deal of sagacity, the state of debility in fevers, and have taught us with much precision, what kind of diffusible stimulants are necessary to be employed. Nevertheless, the precepts which they have left us upon this subject, appear rather to have been derived from books, than from a careful investigation of the phenomena of nature.

Thus, in case the debility is direct, and accompanied with a considerable degree of erethism of the nervous system, they advise us to begin by exhibiting mild but sufficient stimulants, which are to be gradually augmented; and the greater the debility the milder are to be the remedies. But where is the practitioner that conforms to this rule, and that is not, and ought not to be frequently afraid, from the urgent symptoms of this kind of debility, to employ more active stimulants at the commencement? I do not except even those who have professed these principles. Indeed, how little do physicians observe the proper gradations in the employment of stimulants! And how often do they employ those of the most active kind, without effecting their object. This direct debility, however, is only met with in the simple non-contagious nervous fevers.

In case the debility is indirect, and the nervous system is depressed or paralysed, we are advised to commence with the most powerful stimulants, and gradually to employ those of a milder kind. But even in this case, where is the practitioner that conforms to this precept? what would be the advantage of such a course, so long as the state of the vital powers is not meliorated? and if it were, would there not be at the same time a certain degree of irritability?

I believe therefore, and in fact am convinced, that there are other cases of debility, which demand the use of stimulants, and which are not described in books, but which frequently occur in practice; and which must, consequently, be known to every practitioner.

These cases of debility, to which we have just alluded, may frequently be removed by a uniform and constant use of moderate stimulants, by a constant and uniform heat, and by other curative means, especially when they are long continued.

The remarks which we have just made, are especially applicable to the nervous stage of typhus fever. The symptoms of the disease, in fact, indicate a state of debility, with a depression of the nervous system; but experience speaks decidedly against the employment of violent stimulants, especially when there is no appearance of malignity. When they are too mild, they are generally insufficient; but when they are moderate, uniform and continued, they act in the most beneficial manner. Indeed, it would perhaps be better to employ no stimulants at all, than to use those of a violent nature; for in the same manner as an intoxicated person recovers from his stupor and debility, in the course of twelve or twenty-four hours, without the use of stimulants; so does a patient labouring under typhus fever, recover from his stupor in about fourteen days, especially when there is no dangerous circumstance to interrupt the regular progress of the disease.

In both cases, however, the debility cannot be called indirect, for it can be removed without the employment of stimulants, either by raising the vital powers, or by restoring them to their former activity. Stimulants alone cannot increase or regene-

rate the vital powers; they only exalt their activity, which augments by exercise, and depends upon a certain state of the organism of the body.

*Of the Injurious and Superfluous Remedies in this Stage of the Disease.*

When the disease observes a simple and ordinary course, and presents no anomalies, tonic remedies will be perfectly superfluous—for they cannot act here by giving consistency to the fluids which are not decomposed, nor by imparting tone and vigour to the organs which are not relaxed, but which are merely debilitated, or threatened with depression. It is to be apprehended, moreover, that if stimulants were to be given in this case, they would obstinately block up the excretory passages of the body, which it is so essentially necessary to keep moderately open.

In this respect, therefore, the cinchona bark is a superfluous remedy in typhus, especially when it observes a mild and regular course; it is neither useful as a tonic, nor as a specific—a fact which was well known to the partisans of the doctrine of excitement, and already to Cera, who placed no confidence whatever in the virtues of this medicine in typhus fever. Besides, a medicine that is superfluous in a disease, may easily become injurious, and the action of a substance so powerful as that of cinchona, is not likely to be indifferent.

There may be anomalies, however, in this disease, which may demand the employment of cinchona, especially when it assumes a putrid character—of these we shall speak in their proper place.

Opium, calomel and purgatives are not only indifferent and superfluous in this stage of the disease, but they may actually prove dangerous.

The use of opium in this disease has been highly extolled by some, and greatly deprecated by others, and though theory is often full of contradiction, yet it is scarcely possible to believe that experience could give such opposite results. This shows us plainly the imperfection of our art.

The English, who since the time of the illustrious Sydenham, have been the greatest partisans of this remedy, have always used it freely in typhus fever. Cullen was of opinion that wherever the use of wine was indicated, opium might be administered with the greatest advantage. Brown and his partisans gave it with the same view as a stimulant; and Campbell calls it the most precious remedy that can be employed in typhus fever: he regards it as salutary, because it induces sleep and increases the strength of the patient. None of these physicians, however, have observed an immediate cure effected by this remedy; nor have they paid sufficient attention to its narcotic and poisonous properties.

It was by the authority of Sydenham that the use of opium in the delirium of fevers, as well as in typhomania, has been introduced into Germany. This great observer, however, was well aware of the caution that is necessary in the employment of such a remedy, and of its danger when there exists the slightest inflammation. He asserts that it can never be given with safety, before the twelfth or fourteenth day of the disease. It is to this circumstance that the Germans are indebted for their circumspection in the administration of this remedy, and that they have been so much more successful in the treatment of this disease, than their English contemporaries.

Dolæus, Boerhaave and Van Swieten closely followed in the footsteps of this great physician, and never prescribed opium, except in the smallest doses, even in cases where they believed its use was indicated. They generally commenced the exhibition of opiates with the syrup of diacodium (*a*) or the flowers of the poppy. In this respect, Etmuller was the only bold physician in Germany; and the Baron de Stork, (1) went still farther, in as much as he gave forty drops of laudanum at a dose in this disease.

As early as the time of Huxam, however, some of the English physicians were already aware of the doubtful, and in some

(*a*) This is one of the old preparations of opium, and has been justly superseded by the Syrupus Opii.—S. D. G.

(1) Annus Medic. 1. p. 17—18.

measure, injurious effects of opium, and proscribed its use. Amongst the Germans, Burserius and Stoll have cautiously rejected it; and if I am not mistaken, Hecker and the Francks regard it as injurious. Harles recommends its employment with a great deal of caution.

We might be inclined to believe, á priori, that opium was a very proper remedy in typhus, especially in the nervous stage, from the fact that it favours the perspiration, and moderates the copious alvine evacuations; and if we reason according to the principles of Hahnemann, it acts chiefly upon the organs which are affected by the contagious virus—that is—upon the brain and the nerves: it also, undoubtedly, allays the insommolency and delirium.

If we consult, however, without prejudice, experience and observation, we shall be convinced that this is not the case. The opium in fact, augments the stupor, and thus depresses the vital energy; it prevents all the necessary efforts to the production of a salutary crisis; it prolongs the disease, and produces more or less dangerous metastases, or the apoplectic death, and prevents, in every instance, the advantageous effects of other remedies.

This is especially the case, when this remedy is given in powerful doses, and too often repeated. In smaller doses it is less injurious, but still it cannot be said to be useful, nor do we scarcely ever observe any real benefit when administered in this way.

Notwithstanding this, there may be particular indications, which may demand the instantaneous use of opium, especially in the delirium furens, the phrenitis, the dysentery, and in the debilitating diarrhœas of this stage of typhus, where the other remedies are altogether insufficient. But then it acts, as I have always observed, beneficially upon the fever itself, upon the vital powers and the critical movement—to do which, however, its use should not be too long continued.

I believe, therefore, from numerous observations, that opium, in the simple and regular course of typhus, is not only an unnecessary remedy, but that it may even be dangerous; that, notwithstanding this, it is indispensably necessary in some of

the anomalous cases of the disease, and that we ought carefully to distinguish the dangers resulting from its abuse from those of the remedy itself. This danger frequently depends upon the time and the dose in which it is administered. Large doses, when seldom repeated, generally produce the most beneficial effects, and are less injurious in the partial or general indications, than the constant employment of small doses.

Sydenham, who is unquestionably the author of all the good and the evil, that have been done by the use of opium in the treatment of typhus, recommended that it should generally be given about the fourteenth day of the disease, that is, after the appearance of the crisis, and in very small doses, in the same manner as it was afterwards employed by Stoll, his most faithful successor, in the convalescence from inflammation of the brain. Sydenham thus expresses himself: (1) Laudanum, vel alia quævis narcotica in principio, augmento, vel statu hujus febris, ad symptoma hoc levandum (in phrenitide scilicet, vel quod proxime illuc accedis, si æger non omnino dormiat,) vel non prodesse, omnino, vel quod saepe accidit etiam obesse; verum in ejusdem morbi declinatione, mediocri dosi adhibita non sine successu usurpari. Semel equidem narcotico die morbi duodecimo usus sum, nec frustra; citius autem nunquam prospere exhibitum novi. Quod si autem illius usum ad decimum—quartum usque diem distuleris, tanto magis, proficuum evadet. What this great physician has here described under the false denomination of an inflammation of the brain, in which emetics were successfully employed, was evidently nothing but a typhus fever, as is clearly proved by his masterly description of the most essential symptoms of the disease. (2) Lingua sicca, ingens ac subitanea virium consternatio; partium externarum siccitas; in morbi declinatione diarrhœa; parduratio morbi ad quartum decimum, vel unum et vigesimum diem; solutio per sudores, urinis non coctis, etc.

From these observations, I must conclude that the doctrine of Sydenham on the employment of opiates, in this as in every

(1) Opera Medica, Sectio 1, de Morb epid. 1661—1664, Cap. IV.
(2) L. c. C. III.

other fever, has been understood only by a very small number of physicians, while it has been altogether misrepresented by others.

Many of the physicians of the last century have recommended the employment of calomel in the affections of the liver; and there were not wanting some, even at an earlier period, who extolled the salutary effects of this remedy in the contagious fevers. It was for this reason that many physicians have recommended it as a useful remedy in typhus; nor can we be surprised that, considered in this double point of view, the English should even have employed it in cases of the yellow fever of America.

This method was soon adopted by the Germans; and Brandis and Hecker, amongst others, assure us that they have employed calomel in typhus fever with the greatest success.—Sauter also recommends it in the typhus of horned-cattle.

I have employed this remedy in several instances, but never with any real advantage; on the contrary, it appeared sometimes to be injurious. It has no specific virtue in this disease; it generally produces salivation, or diarrhœa, or augments that which already exists, and thus greatly aggravates the symptoms of the nervous stage: in the inflammatory stage, it is probably not so injurious as in the one to which we have just alluded. Besides, it acts unfavourably upon the state of the fluids, and the danger resulting from a salivation thus produced, is extremely great.

Finally, the purgatives, especially those of the milder kinds, which act sometimes so beneficially in the inflammatory stage of typhus, are injurious in the nervous stage, in which the debilitating diarrhœas are so common, and in which every kind of debility begins to assume a dangerous character. Notwithstanding this, however, there are not wanting some who have extolled the virtues of these remedies in this stage of the disease.

Stoll has given them in the typhus fevers, which he has called bilious, or putrid, according to the state of depression of the vital powers. Thom and Titze, of Silesia, also assure us that

they have employed the evacuating method of treatment with the happiest effects in this disease.

Hence we see that there is no remedy or mode of treatment that has not been productive of some benefit, at one time or other, in the cure of fevers, and that does not, consequently, merit some degree of praise. We see also, that the most opposite modes of treatment appear frequently to assist the salutary efforts of Nature, and enable her to surmount every obstacle that is opposed to her career.

From these considerations we can fully appreciate the different results of analogous methods of treatment, and the analogous results of opposite methods of treatment, and thus settle the disputes of the different sects of physicians, especially in relation to the treatment of the different kinds of fevers. To these physicians, however, we may justly apply the adage: Pessima medendi methodo non omnes trucidantur.

*Of the Treatment during the Critical Stage of the Disease.*

During the critical stage of typhus fever, our treatment must consist solely in directing and assisting the salutary operations of nature, by imparting strength and activity to the vital powers; and, in order to hasten their beneficial effects, which depend, in great measure, upon the critical evacuations, it is essentially necessary to keep the excretory passages moderately open.

If both these objects have been happily accomplished, as generally happens in the regular and simple course of typhus, the physician has nothing to do here but to remain, in the strictest acceptation of the term, a silent spectator. Every interference on his part will be superfluous or injurious; every heroic remedy dangerous. This being the case, the practitioner should avoid every thing that may have a tendency to impede the salutary evacuations; and as these take place in typhus fever, in great measure, by sweats, or by a mild and uniform perspiration, nothing should be employed, except some tepid

and slightly stimulating drinks, and a strict regimen, which will neither suppress the sweats, nor render them too profuse.

If the course of the disease, however, has been of an anomalous character, and the vital powers are too languid to produce a crisis, it will be proper to favour the critical operations of nature, by the use of such means as will be capable of giving activity and expansibility to the vital powers.—These means will be pointed out in their proper place.

### *Of the Treatment during the Stage of Remission.*

The activity of the physician should always be in direct proportion to the violence of the disease. He should be extremely circumspect and attentive with respect to the symptoms which supervene in this stage of the disease, and ought always to be on his guard, even when the disease presents the most favourable aspect. In the early stages of the disease it behoves him to act, now to be vigilant, and a cautious spectator of the operations of nature.

If, however, we lay aside all our remedies, after the occurrence of a salutary crisis, it is absolutely necessary that they should be succeeded by a proper regimen; for there frequently supervene small crises which require particular attention; and, as we have already observed, the patient is not yet perfectly convalescent, even after the decisive crisis.

In proportion, too, as the disease becomes weaker, it will be no longer proper to employ those powerful remedies that were necessary during the early stages; and we should be particular in laying aside those that are of a disgusting nature, in order that the appetite may be the more easily restored. In this stage, therefore, when the disease presents no anomalous character, I generally lay aside the camphor and arnica, and give simply an infusion of angelica with some anodyne liquor. The slight stupor of the brain and the perspiration of the skin should be carefully watched, and whenever they present, as they frequently do, any new symptomatic indications, they should always be properly fulfilled.

How long these means ought to be continued, must be determined by the peculiarities and modifications of the case, and must consequently be left entirely to the prudence of the practitioner.

*Of the Treatment during the Convalescent Stage.*

Here, when the disease has been mild and regular in its course, the practitioner lays aside his medicines, and all that he has to do is to put the patient on a proper regimen.—Of this we shall treat in a subsequent part of this work.

## SECTION TENTH.

### OF THE TREATMENT OF IRREGULAR TYPHUS.

In the diseases which deviate more or less from their ordinary course, and which are generally characterized by symptoms which do not essentially belong to them, it is evidently impossible to establish any general rules with respect to a method of treatment, that shall at once be adapted to and founded directly upon the most essential property of the disease. It is for this reason, therefore, that, in every case where there are different kinds of unusual symptoms, it must be entirely left to the prudence and judgement of the physician, to determine what is proper to be done. Notwithstanding this, the principal curative indications ought always to be deduced from the most careful consideration of the predominant character of the disease, of some of the most extraordinary and dangerous symptoms, and from the general affection of the system. But after all, our method of treatment must be founded upon analogy and careful observation.

As in this anomaly the ordinary course of the disease is interrupted, and as the termination, as well as the duration of the different stages, are more irregular than in the simple and ordinary course of typhus, I shall not be able to be so precise, in pointing out the treatment applicable to each stage of the disease, as in the preceding section: I shall only be able, in fact, to speak of the anomalous character of the disease, and of its most extraordinary symptoms.

The inflammatory character of typhus sometimes augments in a very extraordinary manner, either during, or after the inflammatory stage. When this is the case, the disease is developed in the form of a synocha, with or without local inflammation; whence it is evident that the treatment ought to be more strictly antiphlogistic and longer continued. The physician, however, should always pay particular attention to the approaching nervous stage, which will inevitably take place; he ought to economize the vital powers with still greater caution than in any other inflammatory fever, which passes more promptly to the convalescent state; nor should this be neglected even in case there is no severe local inflammation, and when the general inflammatory state may be more readily and effectually combatted. One or two bleedings, with some refrigerant remedies, are generally sufficient, even in the most intense state of this inflammatory character.

If, however, there are local inflammations, it will be necessary to have recourse to more copious evacuations of blood, in order to diminish the local plethora. The consideration of the general affection ought, in some instances, to be sacrificed to that of the local affections.

If there is a local inflammation of the brain, produced by a sanguineous plethora of that organ, or some soporous symptoms, with a kind of semi-apoplectic state, dependent upon a similar cause, it is evident that recourse must be had to very copious evacuations of blood, and to a strictly antiphlogistic plan of treatment. We ought carefully to avoid, however, debilitating the vital powers, and to employ local bleedings, by means of leeches, a refrigerant plan of treatment, and all such means as may have a tendency to relieve this local affection.

Nevertheless, the antiphlogistic means should not be continued until the cerebral symptoms are completely dissipated; because some of them are peculiar to the nature of the disease, and cannot be dissipated by any remedy within the dominions of our art. We ought merely to endeavour to allay and moderate the inflammatory symptoms, in order that there may be less danger during the nervous stage, and during the crises.

In this, as in every other case of typhus, we ought cautiously to abstain from the use of nitre, which acts injuriously upon the fluids, and thus aggravates the symptoms of the disease. We may early resort to the use of camphor, of the flowers of the arnica, and blisters, which may be applied advantageously to the vertex of the head, especially after they have been applied to the calves of the legs.

The inflammation of the fauces is of more rare occurrence in typhus than that of the brain; while the affections of the lungs, on the contrary, are more frequent, and are sometimes attended with pleuritic symptoms, and when intense, even with bloody expectorations. In these cases, and especially in the latter, our dependence must be placed entirely upon blood-letting; if this be neglected, death from suffocation will be the inevitable consequence, or there will be suppuration, or fatal complications during the nervous stage of the disease.

These affections yield more readily to bleeding than the cerebral and other inflammations; and if they are not very obstinate, the respiration may be perfectly reestablished before the nervous stage, under the influence of mucilaginous drinks, which may always be very advantageously employed after venesection.

But if these affections are not perfectly dissipated, before the state of the vital powers is such as not to permit the evacuation of blood, they will be continued into the nervous stage; and, under these circumstances, the thoracic symptoms will demand our most serious attention. Blisters to the chest, the cautious administration of antimonials, of volatile alkali, anise and camphor, are unquestionably the best and safest means that can be employed in these cases. I have never derived any advantage from the use of the seneka; on the contrary, it generally does harm by causing diarrhœa, or by augmenting it when it already exists. Far more benefit may be derived from the employment of squills and the root of the imperatoria.

It sometimes, though rarely, happens that we find the peritoneum and intestines in a state of inflammation. (1) When this

(1) In a few instances I have also met with extremely painful rheumatic affections.

is the case, it is evident that we must have recourse to a strictly antiphlogistic method of treatment, which is to be modified according to the circumstances of each of these local affections, which are sometimes extremely obstinate, especially when the vital powers are in a state of depression. Here camphor and blisters are still our best remedies, as well as the mucilaginous drinks, which can never be neglected without injury, in any stage of the disease.

The inflammations of the liver demand a strictly antiphlogistic plan of treatment, but they are rarely met with in typhus fever; nevertheless, this organ is generally irritated and affected at an early period of the disease.—These affections are generally more frequent in the nervous stage of the disease, and are often attended with jaundice.

In some instances of typhus, the gastric symptoms are considerably augmented and predominate over all the other local affections. They are generally owing to gastric impurities, or are symptomatic of some other affections, and depend upon the presence of bile, in consequence of the deranged state of the liver; at other times, however, they are brought on by heat; but in either case it is absolutely necessary to resort to evacuants.

In the inflammatory stage, the evacuations of the impurities of the stomach are so much the safer, because they do not debilitate the vital powers, but sometimes rather meliorate their condition. If, therefore, these evacuations be neglected, the subsequent nervous stage will be dangerously complicated with the gastric state, and give rise to extremely debilitating and obstinate diarrhœas. On the other hand, if the bowels are permitted to remain in a state of torpor and constipation, they may often become inflamed, and give rise to still greater danger than in the preceding case.

In the nervous stage, on the contrary, when the vital powers begin to diminish, or to be threatened with depression, the gastric evacuations are seldom proper, and should be employed only in the most cautious manner. Excepting enemata, we cannot prescribe any other internal evacuating remedy than

the tincture (1) of rheubarb, which has less debilitating property, and operates with less danger than any other medicine of this kind. The most proper time, however, for the employment of this remedy is during the early stages of the disease, because it will exercise a more salutary influence over the subsequent nervous stage.

The anomalies of the nervous character of typhus may be of two kinds; they may either come on too soon, or they may be too intense.

In the first case, that is, when the nervous stage supervenes before the seventh day, which may be known by the dryness of the tongue and the skin, the tympanetic state of the abdomen, by intense typhomania, and by the commencement of a real debility, with an increase of the nervous symptoms, it is necessary, immediately to have recourse to all the means which are always indicated in the nervous stage of this disease, and which have been confirmed both by observation and experience to be the most efficacious that can be employed.—Of these remedies, we have already spoken in the preceding sections.

In the second case, that is when the nervous stage is more intense than ordinarily, and when it begins suddenly with symptoms malignity and a great degree of vital debility, we must immediately have recourse to the most powerful stimulants. And here we must again lament the want of specific stimulating remedies; even the serpentaria Virginiana, musk, and other medicines of this kind, are altogether insufficient for our purpose. Camphor, in large doses, angelica, ether, and the volatile alkali, are unquestionably amongst the best and most stimulating remedies we possess; but they should be aided by the use of blisters. We may lay it down as a general rule, that in typhus, the doses of these medicines should always be increased in proportion to the depression of the nervous system.

In case, however, the nervous symptoms are more severe, and the patient suffers from spasms and convulsions, the valerian, the camomile, and the empyreumatic animal oil, with

(1) I always prefer the vinous to the aqueous tincture.

the means of which we have already spoken, are the best remedies that can possibly be employed under these circumstances. I have sometimes given the assafœtida, with more success than the musk. If there should be any periodical exacerbations in this stage, there can be little doubt but that the employment of the Peruvian bark (*a*) will prove of the most essential service.

But if these remedies, as it too frequently happens, prove insufficient, the resources of our art are at an end. It is true, I have several times employed the phosphorus and once the phosphoric acid, upon the recommendation of others; but I have never derived any advantageous or permanent effect. In the post mortem examination of these bodies, I found traces of inflammation or gangrene of the stomach, which can be readily explained by the fact that these substances act upon that organ as vesicants. In one of these individuals, I observed an evident relief and a calmness of mind two days before his death: which plainly depended, as was proved on post mortem examination, upon the gangrene of the stomach.

During this more intense and dangerous nervous state, we may often observe passive inflammations, which are developed in some of the most debilitated organs, and which, the modern physicians, for this reason, have called the nervous or asthenic inflammations. Although they are, in some measure, of an erysipelatous nature, yet they are essentially distinguished from the septic inflammations, by the fact that they have no remarkable tendency to gangrene, and that they terminate in this manner only when there is a general putrid diathesis. For, in the post mortem examinations of those that die during the existence of these inflammations, the organs that have been thus inflamed, present rather an engorgement of the vessels than a real gangrenous appearance; and it is for this reason, that I would call them, with some others, nervous inflammations.

These inflammations are very frequent in the brain, and its

(*a*) In these cases, instead of the bark, we may use the sulphate of quinine, in doses of a grain, or a grain and a half, given every two or three hours, in the form of pills, or an emulsion.—S. D. G.

envelopes, somewhat less so in the lungs, but much more so in the intestines, where they are almost always met with in consequence of typhus fever. They commonly supervene in the ordinary nervous stage, or even at a much earlier period.

The nervous inflammations of the brain, which are frequently taken for an intense soporous affection, or for a severe typhomania, must be treated like every other inflammation that is developed during the nervous state. Blisters to the head, (*a*) camphor and arnica should be preferred to all other remedies.

The nervous inflammations of the lungs, which at first cause a considerable oppression at the chest, even after the nervous state is already formed, are undoubtedly developed like the preceding in a gradual and passive manner, and in consequence of the debility of those organs; but I believe that the lungs, being debilitated and engorged, and of a spongy structure, can not so readily as the other organs that are similarly affected, recover by any stimulus, sufficient activity to overcome the resistance of the accumulated fluids and to keep up a uniform circulation.

I am inclined, moreover, to believe, from numerous observations, that, in these inflammations, especially when they are severe, and the vital powers are not too much depressed, a moderate bleeding will effectually remove the local engorgement. In fact, from four to six ounces are generally sufficient for this purpose.

The rational principles to which we have just alluded, and this salutary practice are, in fact, applicable to every other nervous inflammation; though the effects are less evident than in the lungs, from the fact that the vessels of these organs are more easily disgorged, than the others. The lungs, moreover, by their disposition, belong more particularly to the circulatory system, and ought, consequently, as well as the vena cava, to feel more readily the abstraction of the smallest quantity of venous blood. It is for this reason, therefore, that every accumulation of blood in these organs, which threatens suffocation, renders it necessary that we should resort to blood-letting,

(*a*) Would it not be better to apply them to the nape of the neck?—S. D. G.

although this remedy is not indicated for the principal disease.

The utility of small, and as it were, exploratory bleedings, has been acknowledged by many other physicians, and experience confirms, that, without them, the pulmonary inflammations of this kind would frequently have a fatal termination. Soon after, however, or at the same time that we make use of venesection, it is necessary to employ a tonic plan of treatment, because the vessels of the lungs, being generally weakened after a bleeding, must be cautiously excited and put immediately into action.

To effect this purpose, it is necessary to apply blisters to the chest, to administer small quantities of antimonial remedies, volatile alkali, camphor, anise, &c. &c. I have already said that I have never derived any remarkable benefit from the use of the seneka.

The nervous inflammations of the intestines, which are characterized by a morbific increase of the sensibility of the lower part of the abdomen, by tympanitis, (*a*) a small, weak and irregular pulse, and sometimes by tenesmus and dysentery, may, in some equivocal cases, induce an extremely bold or skilful physician to make use of small bleedings; but they are generally of little advantage in these cases, and may even be followed by a much greater degree of debility than in the other inflammations of this kind. Blisters applied to the abdomen are the most proper means, and frequently produce the most speedy relief. Camomile and camphor administered with some mucilage, or mucilaginous drinks and enamata, often produce the most happy effects. In case the inflammation is less intense, frictions or tonic fomentations on the abdomen, may answer all the advantages that may be derived from the application of a blister.

I have never had occasion to try the extraordinary effects which have been attributed to the root of arnica, by Collin and Stoll. The cases which have come under my care, of inflammations of the intestines, have generally been extremely obstinate and almost as dangerous as those of the inflammations of

(*a*) In case of tympanitis, we should give large doses of the volatile alkali, either alone or alternated with the sulphate of quinine.—S. D. G.

the brain; and I am disposed to believe that they are the greatest and most frequent cause of the mortality in typhus fever, and that they have the most intimate relation with the inflammation of the brain.

Finally, the nervous inflammations of the liver, which take place in the nervous stage of typhus, and generally with a considerable increase of debility, are frequently attended with icterus, and belong to the most dangerous and variable symptoms of the disease. The use of calomel, which has been strongly recommended in this case by many physicians, especially by the English, has never, in my hands, been productive of any good effects: it evidently augments the diarrhœa, and unquestionably aggravates the state of the humours. I must confess, however, that I have never experienced, in this state of the disease, any better effects from different other remedies, and that I still place the greatest confidence in the volatile and stimulating frictions upon the right hypochondriac region.

During the existence of the putrid character which is developed sooner or later in this disease, and which is almost always owing to a bad regimen, to the foul and unwholesome air of the patient's apartment, and sometimes to his peculiarity of disposition, we must pay particular attention to the debility which is undoubtedly here the most important symptom, and which indicates the most proper plan of treatment. In the putrid diathesis, properly so called, it is absolutely necessary to exhibit the bark, and the mineral acids, with large doses of camphor. Blisters should be employed as mere rubefacients; and for this purpose we may lay aside the powder of cantharides, and have recourse to the cochlearia armoracia, especially when it is necessary to produce a momentary excitement, and when the powder of cantharides is no longer capable of acting on account of the stupor of the head. The internal use of alcohol is the surest means of arresting the hemorrhages, and should therefore, never be neglected.—These remarks, which are drawn from the practice amongst the poor, are worthy of the most serious attention of the practitioner.

Before we close this section, we shall relate some of the most

remarkable accidental symptoms of the disease, which demand the particular attention of the physician, and point out their appropriate plan of treatment.

The swellings of the parotid glands, even those which are said to be of a critical nature, or which appear at the end of the disease, are, in every respect, extremely unpleasant. I always endeavour, therefore, to prevent or disperse them as soon as they make their appearance. The application of cold water, and the employment of mild purgatives are extremely well calculated to effect this object. If their enlargement, however, becomes inevitable, we must have recourse to such stimulating applications as may have a tendency to accelerate the suppuration; and when this has taken place, the abscess must be opened in order to abridge, as much as possible, the duration of this disease.

The diarrhœa, and even the dysentery which occur in the nervous stage of the disease, demand a plan of treatment which shall neither be too passive nor too stimulating. Opiates are extremely beneficial in these cases, but they should not be too long continued, notwithstanding the symptomatic indications may seem to require their use. I prefer, therefore, in every respect, a large and single dose of this medicine, to small and often repeated doses.—They should be assisted by mild mucilaginous drinks; and none will produce a more beneficial effect, than a decoction of the lichen Islandica; the columba root rarely produces the desired effect; wine, however, is one of the best and safest remedies.

The hiccough, and tympanitic affection of the abdomen, together with the diarrhœa and dysentery, are the inseparable consequences of the inflammatory state of the intestines. And as this is the case, it is evident that these affections can only be allayed after the removal of the inflammation of the intestines, from the fact that we have as yet nothing like a specific remedy. Notwithstanding, I have seen the volatile alkali, when cautiously employed, sometimes produce the most happy effects the tympanitis of the abdomen; nor are the fixed alkalies less beneficial when this affection is continued into the convalescent

stage, especially when the gases, which are produced by chemical phenomena, are contained in the intestinal canal. Nothing is more erroneous than to suppose, that these gases are produced, in great measure, by the aromatic and volatile substances which are taken into the stomach; because the tympanitic affection of the abdomen is more speedily developed in patients that have been treated almost exclusively with purgatives.

Worms, especially the ascarides lumbricoides, are not unfrequently met with in this disease. I am inclined to believe, however, that they are never engendered during this disease; but that they are merely disturbed and expelled from the body in consequence of remedies which are prejudicial to their existence. They are most frequently met with in young persons, and are but seldom seen in adult age. During the last stages of typhus they can never be expelled by violent remedies; so that in case they do exist, they will frequently give rise to a serious complication, and augment the nervous state as well as the affection of the intestines. Valeriana, camphor, &c. never destroy them; they only irritate them, and render them less susceptible of being expelled.

Amongst the symptoms which we have already enumerated as belonging to the anomalous typhus, there are perhaps none more distressing than the retention of urine and the wounds which are occasioned in consequence of the recumbent posture.—The first may be occasioned not only by the use of cantharides, but likewise, in some instances, by unknown causes which produce spasm of the sphincter of the bladder.—The last are the result of the continual pressure of the soft and prominant parts of the body, and their formation is favoured by debility, moisture and want of cleanliness. Both these affections frequently aggravate the disease, in a sudden and unexpected manner; nor can we pay too much attention to them, especially in large hospitals; because the patient himself is often not aware of their existence.

In the spasmodic retention of the urine, I have derived the greatest benefit from the internal use of camphor, and from the employment of fomentations of the common lie to the region

of the bladder.—The wounds require the assistance of the surgeon, with the precautions to avoid, in future, the compression of the affected parts. This, however, it is not easy to accomplish; and we may, therefore, regard this accident as one of the most painful and dangerous in typhus fever. In fact, the consequences of this state are sometimes so distressing, that the patient, even after he has recovered from the typhus, may contract a new fever, of a slow and exhausting nature, which, together with the suppuration of the wounds, will inevitably terminate his existence. It is, therefore, of the utmost importance, and the sacred duty of the physician, to prevent, if possible, this accident, by a proper and well directed dietetic course of treatment.

The rules which are to be observed in the anomalous crises may be easily laid down in a few words, but their execution in practice is neither so easy nor is it always attended with success. The physician, with all the resources of his art, can do but little in these crises, especially if he neglected the state of the vital powers during the early stages of the disease. All, in fact, that he can do, is to treat the patient according to the common principles of our art, and to be contented with unsatisfactory results. Yet as the vital powers are depressed, it will be essentially necessary to give the most powerful volatile stimulants, and never to lose sight of the ordinary evacuations, especially those that take place by the skin.

Finally, the peculiar symptoms which sometimes remain after an anomalous termination and convalescence, will always indicate the appropriate plan of treatment. The most usual of these symptoms, consist generally, in these stages, in some degree of debility, and require, consequently, the prudent continuation of the volatile stimulants and the use of wine. All the external unfavourable symptoms will clearly indicate their proper treatment; but the internal metastases and the derangement of particular organs, are the circumstances which are most opposed to the restoration of health, and which most frequently render the resources of our art vain and ineffectual.

## SECTION ELEVENTH.

### OF THE REGIMEN IN TYPHUS.

Every thing, whether useful or injurious in health or disease, belongs to the province of dietetics.

A proper regimen in most diseases is often more beneficial than any of the medicines of the materia medica. It aids, at least, the effects of these remedies in the most energetic manner, and is of the greatest importance in all those cases where the powers of nature are sufficient, unaided by any remedy, to triumph over the effects of disease.—This is particularly the case with contagious typhus.

The dietetic means, however, ought never to be in opposition to the therapeutic indications; on the contrary, they ought always to act in concert, and tend to the same end. It is for this reason, therefore, that each particular character of the disease requires its proper regimen, in the same manner as its particular mode of treatment.

As in the contagious typhus, the predominant character is variable, at least in each determinate stage, and as it demands a different method of treatment; so a constant and uniform regimen cannot be proper in all cases, but ought to be varied according to the character of the curative indications, and the different stages of the disease.

In the stage of invasion, although it is generally short, and although the fever, when it has once commenced its ordinary course, cannot possibly be abridged before the occurrence of

a crisis, the dietetic means are so much the more certain and beneficial, that if they be neglected, the disease may afterwards assume a more dangerous character. Our chief care here should consist in dispersing the febrile spasm of the skin. The uniform heat of the bed, tepid, slightly acidulated and diaphoretic drinks are the most proper means to accomplish this object: every thing of a cooling nature should be carefully avoided. I have already had occasion to speak of the means that are proper to be employed in this stage of the disease, in order to favour the appearance of a salutary crisis.

In the inflammatory stage, which lasts seven days, and which has the greatest influence upon the mildness or intensity of the nervous stage, and uniformly contributes, when well managed, to the production of a partial and favourable crisis, the regimen and curative means are of the highest importance. This being the case, I shall endeavour carefully to point out the particular circumstances of the dietetic means that are to be observed during this stage.

Air and heat, which are so essential to the preservation of life, and which may, according to circumstances, be either favourable or prejudicial to health, merit, unquestionably, our first consideration. Without paying any attention to the chemical hypothesis, or to the chemical process of the contagion, and without speaking of the chemical principles of the air, which may be either injurious or dangerous in consequence of want or excess; I shall, since the truth of this subject is still involved in obscurity, merely speak of the atmospheric air in its state of purity, which, as experience teaches us, both in health and in disease, in typhus and in every other fever, is of the utmost importance to the pulmonary and cutaneous system.

From the facts to which we have just alluded, it is evident that it is of the utmost importance in typhus, as well as in every other disease, to procure a pure and wholesome air for the patient, without, however, exposing him to its current. The ventilations, properly so called, are always more or less injurious to the patient, in as much as they act as a variable and unequally distributed atmosphere. The best ventilation con-

sists in a general renewal of the atmospheric air, without producing a current. A very spacious apartment, exempt from human, animal and vegetable exhalations, always completely effects this object. In crowded chambers, however, the freest ventilation never answers so well. The patient's bed should be divested of its curtains, and the air should be perfectly pure, cool, and renewed, as occasion may require, by opening the windows of the apartment. It is important also, that the patient should lie in bed, and not upon the floor, where the renewal of the air is more difficult, and where the contagion is more easily developed and propagated.

If these views cannot be fulfilled, no service whatever can be rendered to the patient. Nothing can answer the purpose of pure and wholesome air; and, in fact, it would be far better and more humane, to place a poor patient in a refectory than in a crowded and unventilated apartment.

Dry air, in this disease, is preferable to humid air, which is injurious to the reestablishment of the functions of the skin, and often gives rise to obstinate and dangerous diarrhœas. The contagion is also easily propagated in dry seasons; consequently an open, dry and ventilated apartment is more beneficial not only to the patient, but likewise to the attendants.

In the inflammatory stage of typhus, cold air deserves a decided preference As an intense degree of cold destroys the contagious miasm, or renders it inert, so a cold air is the most certain means of arresting the progress of the contagion. An excess of heat, on the contrary, favours the propagation of the contagious matter, from one individual to another. The cooling treatment which has done so much benefit in the smallpox, furnishes a striking confirmation of this fact, and a precious analogy for the treatment of other diseases of this kind. The exanthematous irruption which is almost always the same in every contagious fever, by no means requires a warm and stimulating treatment. And the cutaneous organ, in the first stage of this fever, is only disposed to a perspiration which is frequently more benefited by cold than by heat, because in cold seasons the skin is more susceptible to the necessary

and beneficial excitement; I do not wish to be understood, however, that the patient ought to be cold and chilly, as has been pretended by some physicians, who have but badly interpreted the doctrine of the treatment of small-pox; I merely say that the air ought to be cool, and it would be desirable that the atmosphere, in this stage, should be about ten degrees of Reaumur's thermometer. Even the catarrhal state in this stage of typhus, by no means contradicts this kind of treatment.

In this respect, the affusions of cold water, which Brandrath, of Liverpool, Currie, and other physicians, have recommended as curative means in typhus and the other contagious exanthematous fevers, may undoubtedly be useful, as well as the aspersions of cold water. I have but little experience, however, with these remedies; but from the observations of others and the knowledge of the nature of typhus, I am disposed to believe that I may safely conclude, that the general aspersion of the body, when not too often repeated, will be more beneficial than the too frequently repeated affusions, which always produce a degree of cold, and a prejudicial effect. Gentle aspersions not only allay the disagreeable and burning heat, and produce a mild and beneficial perspiration, but they are likewise unfavourable to the propagation of the contagious matter.

If the reader is disposed to believe that there is a contradiction in what I have just said, and that the excess of praise that has been bestowed upon a refrigerating plan of treatment, is not compatible with the catarrhal inflammatory state of the exanthematous fevers in general, and of typhus in particular, it will be sufficient, abstractedly of any theoretical notions, to refer him to the voice of experience and to the beautiful remarks that were already made upon this subject by Hahn, during an epidemic which prevailed at Breslau, in 1737, and to those of Moneta, (*a*) made at a later period. Frictions with ice were already recommended as early as the time of Samuilowitz, as salutary in the pestilential typhus.

The diet, in the inflammatory stage of typhus, ought like-

(*a*) Uber den Nutzen der Kalte und des kalten trassers in Catharrfiebern.—Warschen, 1776.

wise to be in relation with this character of the disease: here, however, the food may be somewhat more nutritious; because we cannot expect a cure before the nervous stage, which lasts several days, and which deserves to be taken into consideration; and because in the ordinary and moderate course of typhus, the inflammatory character is never developed in a very high degree. Nevertheless, dry and solid food is indigestible, and in every respect injurious. Rice and barley water, with a little lemon-juice, vinegar or wine, thin panado, &c. given in small quantities three or four times a day, are unquestionably the best kind of food that can be employed.

For his common drink, the patient may take some weak lemonade, wine and water, and other drinks of this kind. These drinks should never be too cold nor too hot; but always moderately warm. When the cough is severe and the chest much affected, it will be adviseable to give mucilaginous drinks, and some weak tea in order to induce a gentle perspiration.

Exercise, when not too severe and performed by the efforts of the patient, is always highly beneficial. This should, therefore, never be neglected, at least so long as it is practicable; and if the patient is not able to walk by himself, he should be supported on the arm of a friend or an assistant. If the patient, however, is too weak to walk and to support himself in the erect posture, it will be adviseable, and, in fact, it cannot be too strongly recommended, for him to sit up in bed, in order to give strength to the vital powers. By this means, at least, the head will become more free, the sleep more tranquil, the perspiration reestablished, and the power of motion more easy.

It is true every movement on the part of the patient requires a great deal of exertion; but this effort itself is invigorating: for it is with typhus as with inebriation or drowsiness—the less resistance we make, the more will we be inclined to indulge.

I once attended a pious clergymen, who contracted the contagion while visiting the sick that were confined in a hospital during a typhus epidemic. As he felt disposed strictly to follow my prescriptions, I advised him to take a little exercise and sit up as much as possible. He conformed so strictly to this

advice, that he had himself dragged about his chamber by two of his servants, three times a day, and for nearly an hour at a time. Sometime after this, I attended another patient, who, in his delirium, thought that he was obliged to make a long and speedy journey; he left his bed with much exertion, dragged himself about his chamber, and repeated this exercise so often that it was necessary to make him return to his bed by dint of authority. In these two cases, the course of typhus, especially during the nervous stage, was uncommonly slight. From these facts, we have a striking proof of the influence of the mind over the morbific impressions of the body, when the power of the will is strongly exercised.

It is generally necessary also to rouse the patient, as much as possible, from his drowsiness, by external stimulants. His chamber, therefore, should be perfectly clear; all noise should be carefully avoided; and if, in his delirium, he seems to be constantly occupied with himself, it is necessary to divert his attention, and enliven his spirits.

In the inflammatory stage, where the stupor and typhomania are not developed in so high a degree, it will often prove of the utmost importance to make use of a moral treatment. By persuasion, we may correct the erroneous ideas of the patient, enliven him by encouragement, and excite in him some salutary desires.

In this stage of the disease, it will be highly injurious to induce a sudden perspiration by means of the heat of the bed, by thick coverings, or much clothes. These should, therefore, be strictly avoided; and in the summer, the patient ought to be covered with nothing else than a sheet or light blanket.

During the nervous stage of the disease, the patient must be watched with the greatest care. The air of the apartment should no longer be so cold as before; and, if possible, the temperature should be elevated from three to four degrees; the covering of the patient ought also to be increased in order to make him a little warmer. Notwithstanding this, the temperature should always be perfectly uniform, in this as well as in every other stage of the disease. The air ought to be dry and

pure; for if the patient is plunged, as it were, into a cold and humid atmosphere, or is subjected to sudden vicissitudes, he will be extremely liable to become affected with diarrhœa or dysentery, which is one of the most dangerous accidental symptoms of the disease, and one that cannot be overcome by any method of treatment, until the state of the atmosphere is improved. During the prevalence of a violente pidemic typhus, these accidental affections caused the death of half the sick that had been placed in the nunneries and churches, where they were constantly exposed to cold and moisture, or were deprived of the most necessary articles of life, and where it was impossible to procure heat and avoid moisture.—It must be remarked also that the want of cleanliness of the patient's apartment may greatly contribute to the preservation of the moisture of the air.

The food should be a little more invigorating, and more easy of digestion than during the inflammatory stage. Nourishing broths, soups, made of beer or wine with the yellow of an egg, &c. are the most proper kind of food that can be employed. Solid food ought never to be allowed before the occurrence of a decisive crisis. All kinds of fruit are improper, in as much as they possess but little nourishment, and frequently occasion a distressing diarrhœa.

Wine, although it is not to be used as an ordinary drink, because the mucilaginous drinks are always preferable, is nevertheless an indispensable remedy, and one of the most powerful means for repairing the vital powers. The more spirituous and vinous it is, the better; it nourishes and excites the body; fulfils all the curative indications which are presented; and by means of the alcohol which it contains, it acts as a salutary stimulus upon the brain, the nervous system, the skin, the stomach and the intestines. It should be given, however, only in table-spoonful doses, repeated several times during the day.

The dose ought never to be so large as to produce intoxication; for this would be adding intoxication upon intoxication, and intoxication, it is well known, is no proper remedy for typhus fever. It is well known too, that the inebriating method

of treatment which has been pursued by some of the modern physicians has been a fruitful source of the death of many of their patients; and when Campbell asserts that he has prescribed two bottles of Madeira, and as many of Port wine a day, in cases of typhus fever, we are only surprised that great drunkards can bear as much wine in a state of debility, and fever, as in health.

Besides the moderate doses of wine, it will be necessary, in this stage of the disease, to continue the use of such mucilaginous drinks as are calculated to repair the loss of the fluids, (*a*) to nourish, in some measure, the body, and to dissipate the dryness of the organs, especially that of the tongue, the fauces and the alimentary canal. They act also very advantageously upon the intestines, which are extremely irritable in this disease, and upon which the general irritability of the body seems, in some degree, to be concentrated. But as the patient is generally in a state of stupor and indolence, he should be frequently desired to drink, especially when the tongue and the fauces are dry, and when there is much difficulty of swallowing.

In this stage of the disease, the voluntary movements of the body are performed with so much difficulty, that it is often necessary to rouse the patient, especially as his drowsiness is much greater than in the preceding stage. In fact, he is unable to walk, though with some assistance he is able to leave his bed, or at all events, to sit up, or turn about in it. If the erect posture is not supportable on account of the vertigo or faintness, we must be contented by raising the patient occasionally in his bed, or by shifting his position.

The stimulus of the external senses is still more necessary in this, than in the preceding stage, because they are more considerably depressed: nevertheless, the moral treatment is less beneficial, on account of the state of the patient, who is, as it were, an inanimated mass.

The cleanliness of the patient should always be a particular

(*a*) For this purpose, we may hourly administer small quantities of tapioca, sago, arrow-root, oatmeal or Indian gruel, rendered pleasant by the addition of wine, and some of the most agreeable aromatics.—S. D. G.

object of attention, because when this is neglected, it will inevitably give rise to excoriations of the parts that are exposed to pressure—a circumstance which it is so difficult to prevent, and one which frequently occurs in spite of all our care, and disinterested attachment to the patient.

Besides this necessary cleanliness, we should never neglect to remove the mucous matter from the tongue, the gums and the teeth, either with a little salt and water, with vinegar, or lemonade. It will likewise be necessary to observe this precaution with respect to the nostrils. This substance which is sometimes dry and inspissated, often appears to prevent the desired remission of the disease, and to retain or augment, in some measure, the contagion, in consequence of the property which it seems to possess of concealing a part of the contagious matter.

When the typhomania is intense, we are advised by some physicians to cut or rather to shave the hair of the head. This may probably be done with safety in the early stages of the disease; but there are facts which clearly prove that we cannot always have recourse to this means, without unpleasant consequences in the nervous stage.

We conceive, indeed, that the cutting of the hair may even have an unfavourable influence upon the functions of the skin, which are so necessary to be reestablished.

During the crises, the regimen ought always to be so regulated as to be in the most perfect relation with the other curative indications. The state of the air and the food should be so disposed as to assist, in the most powerful manner, the critical operations of nature. And as the perspiration is one of the most favourable symptoms, we should endeavour to favour it as much as possible by a warm temperature, by a moderate warmth of the bed, by proper drinks, and by all such means as have a tendency to act upon the skin.

As soon as the disease begins to terminate, we should pay still more attention to the regimen, because nearly all the remedies are now to be discontinued. Pure air, nourishing and easily digestible food, wine and moderate exercise, constitute the proper regimen in this stage of the disease.—It may be remarked,

moreover, that the food should be increased in quantity in proportion as the medicines are discontinued.

During the convalescence, the regimen should be of such a nature as to consolidate the cure in the most speedy and perfect manner. The employment of medicine ceases with the disease; and the physician has nothing more to do than to prescribe such a dietetic course as shall be applicable to the debilitated state of the patient.

As the desires of the patient, however, not only every day augment, but sometimes really degenerate, it will be necessary to regulate the regimen in such a manner that he may be enabled to observe every possible moderation.

Besides, it is extremely important that the patient should change his room and the bed in which he was confined; and this ought to be done as soon as practicable. His mind is to be kept perfectly free;—he should be particularly cautioned against entering the warm bath, before the old epidermis and the hair have fallen off and are completely regenerated,—and if there are any anomalous symptoms, it will be the duty of the physician to modify the regimen according to the circumstances of the case.

## SECTION TWELFTH.

### GENERAL OBSERVATIONS ON THE ORIGINARY TYPHUS.

It is evident that the contagious miasm of typhus, may, according to certain circumstances, be at all times developed and originally produced in our climates, and have the power of extending itself, and of occasioning similar diseases almost ad infinitum. Thus there arises a miasm not only without previous contagion, but likewise an originary or primitive typhus, which may give rise to many other typhus fevers that may afterwards be communicated by contagion.

It is not improbable that there are different kinds of contagious miasmata formed daily under our own eyes, in the same manner as the virus of hydrophobia, and, as we have reason to presume, the virus of gonorrhœa and of syphilis. But the circumstances and conditions under which such virus have the power of propagating themselves, are, for the most part, still unknown.

The original development of the matter of typhus, however, is by no means so difficult to be understood; and I shall, therefore, devote this section to an explanation of the circumstances under which this virus is formed, point out the facts from which we may conclude that there is a primitive typhus; and conclude with some observations upon the means by which the development of the contagious matter may be happily prevented.

The opinions of physicians, concerning the causes and the mode of development of this disease, when it arises primitively and without previous contagion, are as much divided, as they

are upon the contagious or non-contagious nature of typhus; and there is, perhaps, not a single cause of any disease, that has not been supposed to be capable of producing the originary typhus.

The use of meat without vegetables, a diet of bread and wine, the employment of badly cooked or spoiled meat, the use of the flesh of unhealthy animals, of spoiled fishes or eggs, of bread made of bad grain, of spoiled vegetables and unhealthy water, have all been recognised by many physicians as the general causes of typhus fever. But experience daily demonstrates that these different kinds of aliments and of drinks are not always prejudicial to health, and that they may in fact frequently produce diseases which are not at all of the contagious typhus character: for if they had the property of occasioning this disease, it would be possible to produce it artificially by the causes to which we have just alluded. The causes of the primitive typhus, as well as those of the subsequent contagious typhus do certainly not act upon the stomach of the human subject.

No one, I am sure, can fail of pitying the partisans of the doctrine of excitement, who tell us with so much self-satisfaction that the want of meat, of wine, and of proper food, exposure to cold, the loss of fluids, and the depression of the mind, and every kind of debility, are the causes of typhus fever. We grant that these debilitating means may give rise to a real debility of the human body, but it would be absurd to suppose that they were really capable of occasioning an artificial typhus fever. It is well known, indeed, that persons who labour under other diseases, may pass through all the stages of debility produced by these causes, without exhibiting the peculiar progress of a contagious typhus, or any of its characteristic symptoms. It is extremely erroneous to suppose that the debility and the typhus are one and the same thing; and it is a highly important question to ascertain, whether the depression of the nervous system, which is observed in typhus fever, and the debility which accompanies it, are one and the same morbific state.

The ancients, in this respect, were nearer to the truth than the physicians of the present day; they searched for the causes capable of producing this disease, rather in the air than any where else, and for its primary morbific effects rather in the skin than in the alimentary canal. But, notwithstanding this, they may be justly reproached for having paid too little attention to the affection of the nervous system.

Marshy effluvia, inundations, exhalations of animal and vegetable substances in a state of putrefaction, a corrupted state of the blood, and the effluvia arising from the excrementitious discharges, are chiefly recognised as the causes of this disease. It should not be forgotten, however, that a person may, according to his habits, remain in a state of health under the influence of an impure atmosphere, and that when diseases are developed, they must not necessarily be of a contagious typhus nature. The different disagreeable effluvia, (1) and the virus of typhus, moreover, do not seem in general, to have any reciprocal connexion; yet the marshy exhalations, and the vapours of stagnant waters, appear, amongst other impure exhalations, to be of a more suspicious nature, as regards their influence upon the production of the originary typhus; for it is well known that in Hungary, Holland, Mantua, and other places, these causes give rise to intermittent fevers, which, under some circumstances, soon become malignant, and assume a contagious type, analogous to that of typhus fever.

We are indebted to the army physicians for our best accounts of the circumstances and conditions under which the air may become the cause of contagious typhus. Menderer, Monro, Pringle, and others, have carefully pointed out the dangers that may arise from an atmosphere that is surcharged with human effluvia; and it is to an atmosphere of this nature, in fact, that we must look for the source of the contagious matter, and of the contagion of typhus fever.

It is well known too, and confirmed by the most unequivocal proofs, that the effluvia arising from healthy individuals who

(1) Gestank.

are crowded and pressed together into narrow apartments, have also the most injurious influence upon health. The same thing obtains with respect to the air of prisons, of houses of correction, of vessels, and of every other establishment where the inhabitants are crowded together, and are obliged to inhale the effluvia arising from their own persons.

The same causes, as has been justly observed by Will, (1) produce the typhus of horned-cattle, when, during the existence of war, of bad weather, and of other circumstances, these animals are crowded together and confined in narrow stables.

These dangers, however, are more particularly manifested in those small and crowded apartments where the confined already suffer from attacks of fevers, especially from those of an inflammatory character.

The typhus, and in fact, all fevers without distinction, have their peculiar character, and a particular relation with the skin and the atmosphere; so that, all things being equal, persons who labour under an attack of fever, require more air, and propagate the effluvia arising from their own bodies to a much greater distance than healthy individuals. This is especially the case in military hospitals, where many of the wounded and sick are crowded together, and confined in small narrow apartments. The changes which are experienced in persons thus confined, and the chemical combinations which take place in the atmospheric air, cannot be satisfactorily explained, either by our chemical knowledge of the atmosphere, or by our knowledge of the animal chemistry of the healthy or diseased state of individuals. And though Volta, in his researches upon the air of hospitals, has not been able to discover any thing of an unusual or remarkable nature, it is certain that the causes of the primitive typhus depend upon the changes which are produced in the atmospheric air—a circumstance which is easily proved by the fact that we can at all times produce, by the causes to which we have already alluded, an artificial

(1) Bemerk. über die in Bayern sich vermehrenden viehseuchen. Munchen. 1799.

virus of typhus, and that we are able, by the removal of these causes, to avoid its development.

As I am writing merely a practical work upon typhus fever, I am anxious to avoid every inadmissible hypothetical opinion; I cannot help concluding therefore that a deoxidation of the skin, to which Hartmann has attributed the production of typhus, does not constitute the essence of the disease, and that it is incapable of producing its development; because the permanent activity in the mixtures and combinations of the atmospheric air, is not calculated to maintain the skin of those who are affected with typhus in a state of continual deoxidation, nor those bodies that are infected with the contagious matter.

This originary contagious matter is not only attached to the air which surrounds the sick, but it is likewise applied to such bodies for which it has an affinity, and which are consequently its best conductors. Thus it acts either upon the healthy or upon the sick, but chiefly upon those who suffer from fever, and who are, as it were, immersed in it. Persons, in fact, who suffer from any kind of fever, whatever may be its nature, are particularly susceptible to its reception. Under these circumstances, it produces a double disease; for the typhus is added to the fever which already exists, and thus it assumes, almost always, an anomalous character. The contagion, in this case, takes place so promptly, that it is generally impossible to discover the forming stage of the contagious fever; and there appears a nervous character which is commonly attributed to other causes.

Here naturally arises the question, how we may be able to distinguish this kind of originary typhus from the other diseases with which it is complicated, in order to enable us sufficiently early to employ the proper and necessary remedies for its removal?

Every fever, whether intermittent or continuous, inflammatory, gastric, exanthematous, nervous or putrid, may degenerate into a typhus state. The intermittent fever may become continuous, and the characters of the preceding continuous fevers may be dissipated or concealed under the essential symptoms of typhus, in such a manner as to facilitate its diagnosis. To the

symptoms of the fever which preceded, are added the vertiginous stupor, the typhomania, the redness of the eyes, the catarrhal affection of the nose, of the fauces, the trachea and the lungs, the dryness of the tongue and the skin, the deafness, the tympanitic affection of the belly, the limpid appearance of the urine, and the other symptoms which characterize typhus fever. It is distinguished from the simple nervous and non-contagious fever, in this, that in the latter, the vertiginous stupor and the catarrhal symptoms are completely wanting; while the other symptoms, such as the subsultus tendinum, the convulsions, the cramps and the general erethism of the body, are greatly aggravated. The periodical exacerbations, whether quotidian, or tertian, are likewise more peculiar to the simple nervous and non-contagious fevers.

The progress of a typhus fever, however, which supervenes during the existence of another fever, is always anomalous. Its duration is generally difficult to be determined, in as much as we are unacquainted with the period of its invasion; and, in case it supervenes during the existence of an exanthematous or putrid fever, its course is extremely rapid, and its termination generally fatal.

When the primitive typhus is developed in hospitals or in large establishments, which are under the direction of physicians, it is extremely important to prevent, by every means in our power, the propagation of the disease which is so fatal in its consequences; nor should we neglect to prevent the formation of the contagious matter, by removing the causes and the circumstances which produce it, and which are so well known to most physicians.

In order to direct the attention of the profession to this highly useful enterprise, in the most favourable manner, I shall conclude with some observations upon the possibility of preventing the development of the contagious matter; and although these observations are not new, they cannot, in order to be profitable, be too often repeated. Unfortunately this subject has been too much neglected by medical practitioners, nor has it received sufficient attention from the medical police.

It would be desirable, therefore, that proper authorities should be constituted, who are convinced of the importance of this object, and that the means of preventing the disease should rather be confided to the business of the police than to that of private physicians, who, when they are not aided or examined by the police officers, may employ all their efforts and best intentions to no purpose.

As the atmosphere of hospitals, or of any other establishment, when vitiated and loaded with human effluvia, especially with those of sick persons, is the sole cause of the originary typhus, and as the best means for preventing this terrible disease, uniformly consists in the removal of these causes, and in the preservation of a pure and respirable air, every authority, as soon as convinced of the importance and utility of this object, should employ such measures as are calculated to remove the disease and to prevent its future effects. In fact, it should be the business of every government that takes an interest in the welfare of its subjects, to watch over the sick, to supply them with food, with the proper remedies, and all the necessaries of life; and above all, to render the air of the apartments in which they are confined, pure and salubrious.

What benefit can it be to the infected sick to be shut up in a crowded and unventilated hospital or a military lazaretto? would it not be far better to place them in barns and in open houses than to confine them in small and narrow wards? By this means, at least, we might prevent many of the evils and dangerous consequences of the disease.

Every practitioner is extremely anxious to keep his patients warm, yet it is astonishing that so little attention is paid to the preservation of a pure and wholesome air. Air is certainly more useful than heat; for the deficiency of heat can often be supplied by food or medicine; while the want of air can never be replaced either by the best regimen, or the most costly remedies.

This important truth should never be lost sight of by the civil and military authorities. It is the duty of all those who are intrusted with the sacred office of watching over the welfare of

human society, to employ every means that may be calculated to effect this highly important object.

It may be remarked, in conclusion, that, in the civil state, the hospitals should be large and numerous, according to the population of the country, in order that, if the number of the sick greatly increases, as is generally the case during the prevalence of an epidemic disease, there may be no difficulty in procuring large and well ventilated apartments. It may here be remarked too that a hospital should never be crowded, and that it would be far better to receive no sick at all than to confine them in an unhealthy and infected atmosphere.

THE END.